17" Auto scan Colour Monitor

Chassis :CM2300

Service
Service
Service

EPA POLLUTION PREVENTER

DDC/Power saving/TCO
User-friendliness Control

107S2 CM2300

107S21/97C (COCA+)

Service Manual

Horizontal frequencies
30 - 71 kHz

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SAFETY NOTICE

ANY PERSON ATTEMPTING TO SERVICE THIS CHASSIS MUST FAMILIARIZE HIMSELF WITH THE CHASSIS AND BE AWARE OF THE NECESSARY SAFETY PRECAUTIONS TO BE USED WHEN SERVICING ELECTRONIC EQUIPMENT CONTAINING HIGH VOLTAGES.

CAUTION: USE A SEPARATE ISOLATION TRANSFORMER FOR THIS UNIT WHEN SERVICING.

REFER TO BACK COVER FOR IMPORTANT SAFETY GUIDELINES

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OSD Adjustments

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The OSD Controls

BRIGHTNESS

To adjust your screen's brightness, follow the steps below. Brightness is the overall intensity of the light coming from the screen. A 50% brightness is recommended.

1) Press the ◄ or ► button on the monitor. The BRIGHTNESS window appears.

2) Press the ◄ or ► button to adjust the brightness.

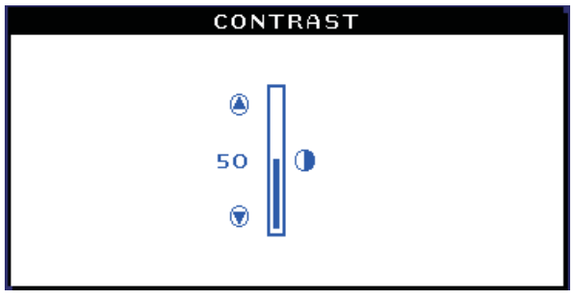
3) When the brightness is adjusted to the level desired, stop pressing the ◄ or ► button and after three seconds the BRIGHTNESS window will disappear with the new adjustment saved.

Smart Help After the BRIGHTNESS window has disappeared, to continue to the CONTRAST window, follow the steps under CONTRAST.

CONTRAST

To adjust your screen's contrast, follow the steps bellow. Contrast is the difference between the light and dark areas on the screen. A 100% contrast is recommended.

1) Press the ▲ or ▼ button on the monitor. The CONTRAST window appears.



2) Press the ▲ or ▼ button to adjust the contrast.

3) When the contrast is adjusted to the level desired, stop pressing the ▲ or ▼ button and after three seconds the CONTRAST window will disappear with the new adjustment saved.

Smart Help After the CONTRAST window has disappeared, to continue to the MAIN CONTROLS, follow the steps under LANGUAGE

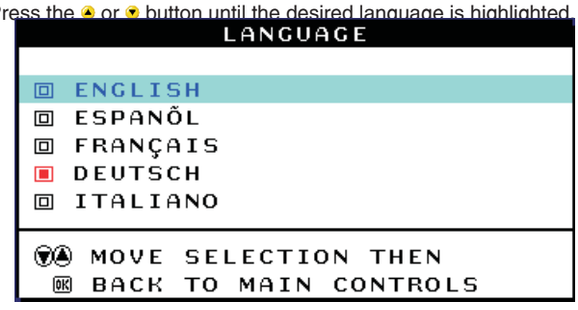
LANGUAGE

The ON SCREEN DISPLAY shows its settings in one of five languages. The default is English, but you can select French, Spanish, German, or Italian.

1) Press the MENU button on the monitor. The MAIN CONTROLS window appears. LANGUAGE should be highlighted.

2) Press the MENU button again. The LANGUAGE window appears.

3) Press the ▲ or ▼ button until the desired language is highlighted.



4) Press the MENU button to confirm your selection and return to MAIN CONTROLS window. CLOSE MAIN CONTROLS will be highlighted...

Smart Help After returning to MAIN CONTROLS . . .

. . . to continue to INPUT SIGNAL SELECTION, press the ▲ button until INPUT SIGNAL SELECTION is highlighted. Next, follow steps 3 - 5 under INPUT SIGNAL SELECTION.

. . . to exit completely, press MENU the button

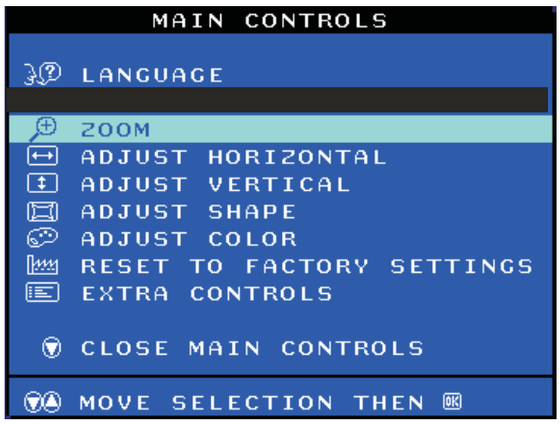
OSD Adjustments

ZOOM

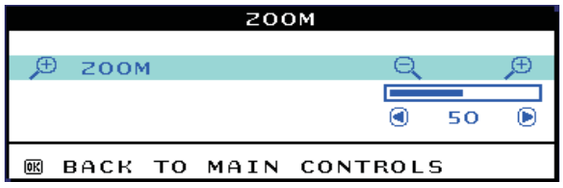
ZOOM increases or decreases the size of the images on your screen. To adjust the ZOOM follow the steps below.

1) Press the button on the monitor. The MAIN CONTROLS window appears.

2) Press the --button until ZOOM is highlighted.



3) Press the button. The ZOOM window appears.



4) Press the or button to adjust ZOOM.

5) Press the button to confirm your selection and return to the MAIN CONTROLS window. CLOSE MAIN CONTROLS will be highlighted.

Smart Help After returning to MAIN CONTROLS . . .

. . . to continue to ADJUST HORIZONTAL, press the button until ADJUST HORIZONTAL is highlighted. Next, follow steps 3 - 7 under ADJUST HORIZONTAL.

. . . to exit completely, press the button

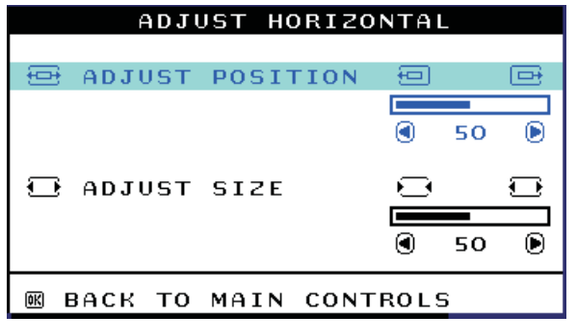
ADJUST HORIZONTAL

ADJUST POSITION under ADJUST HORIZONTAL shifts the image on your screen either to the left or right. Use this feature if your image does not appear centered. ADJUST SIZE under ADJUST HORIZONTAL expands or controls the image on your screen, pushing it out toward the left and right sides or pulling it in toward the center.

1) Press the button on the monitor. The MAIN CONTROLS window appears.

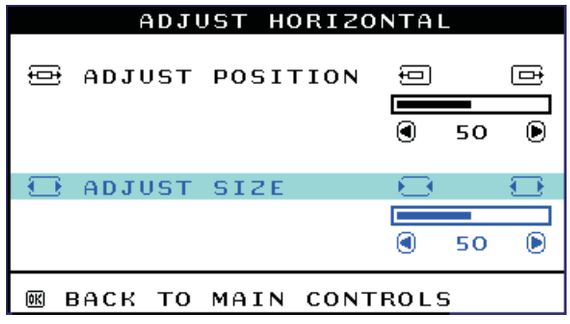
2) Press the button until ADJUST HORIZONTAL is highlighted.

3) Press the button. The ADJUST HORIZONTAL window appears. ADJUST POSITION should be highlighted.



4) Press the or button to move the image to the left or right.

5) When the position is adjusted, press the button to return to MAIN CONTROLS window, or press the to highlight ADJUST SIZE.



6) To adjust the horizontal size, press the or button.

7) When the size is adjusted, press the button to return to MAIN CONTROLS window. CLOSE MAIN CONTROLS will be highlighted.

Smart Help After returning to MAIN CONTROLS . . .

. . . to continue to ADJUST VERTICAL, press the button until ADJUST VERTICAL is highlighted. Next, start with step 3 under ADJUST VERTICAL and follow the directions.

. . . to exit completely, press the button

ADJUST VERTICAL

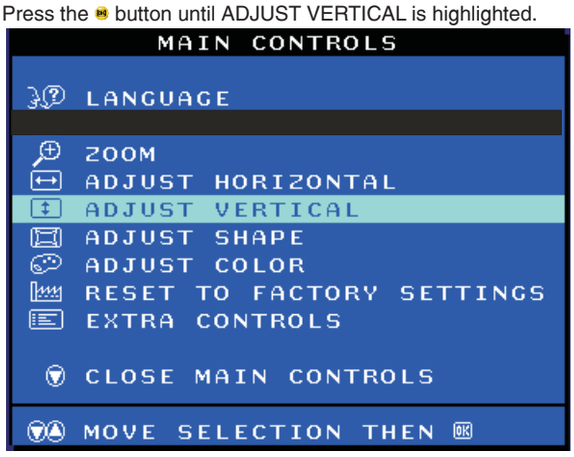
ADJUST POSITION under ADJUST VERTICAL shifts the image on your screen either up or down. Use this feature if your image does not appear centered. ADJUST SIZE under ADJUST VERTICAL expands or controls the image on your screen, pushing it out toward the top or bottom or pulling it in toward the center.

1) Press the button on the monitor. The MAIN CONTROLS window appears.

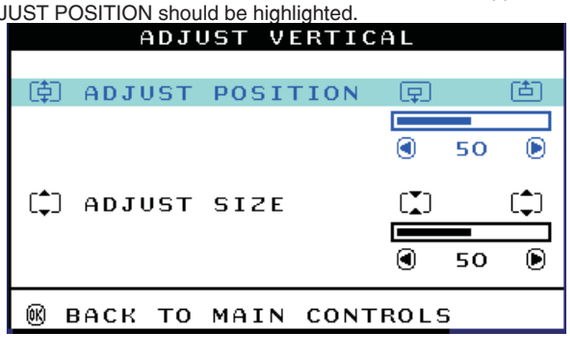
OSD Adjustments

Go to cover page

2) Press the button until ADJUST VERTICAL is highlighted.

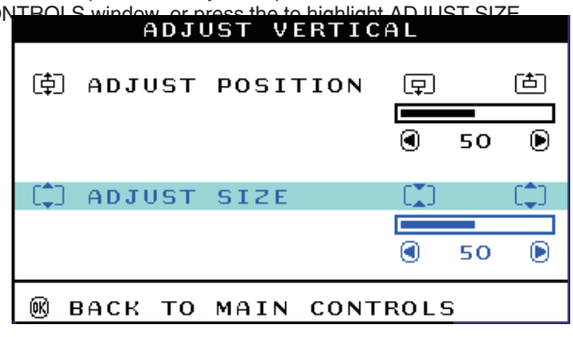


3) Press the button. The ADJUST VERTICAL window appears. ADJUST POSITION should be highlighted.



4) Press the or button to move the image up or down.

5) When the position is adjusted, press the button to return to MAIN CONTROLS window, or press the to highlight ADJUST SIZE.



6) To adjust the vertical size, press the or button.

7) When the size is adjusted, press the button to return to MAIN CONTROLS window. CLOSE MAIN CONTROLS will be highlighted.

Smart Help After returning to MAIN CONTROLS . . .

. . . to continue to ADJUST SHAPE, press the button until ADJUST SHAPE is highlighted. Next, start with step 3 under ADJUST SHAPE and follow the directions.

. . . to exit completely, press the button

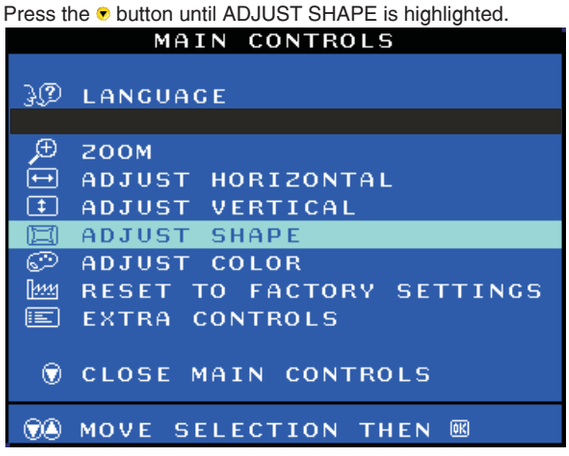
ADJUST SHAPE

ADJUST SIDE CURVE

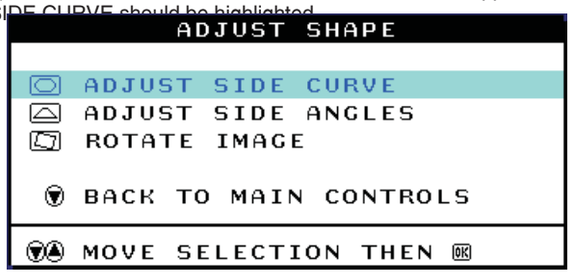
ADJUST SIDE CURVE under ADJUST SHAPE allows you to adjust two of the five preset options. These two options are PINCUSHION and BALANCED pincushion. Note: use these features only when the picture is not square.

1) Press the button on the monitor. The MAIN CONTROLS window appears.

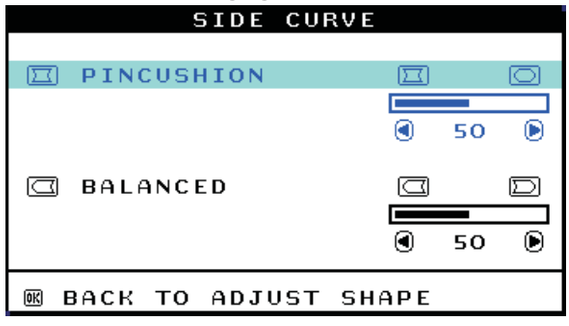
2) Press the button until ADJUST SHAPE is highlighted.



3) Press the button. The ADJUST SHAPE window appears. ADJUST SIDE CURVE should be highlighted.

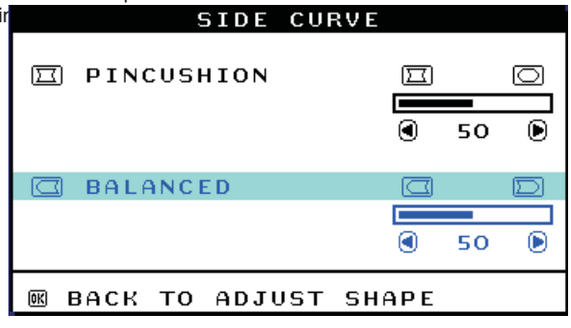


4) Press the button. The SIDE CURVE window appears. PINCUSHION should be highlighted.



5) To adjust the pincushion, press the or button.

6) When the pincushion is adjusted, press the button to highlight BALANCED or press the button to return to the ADJUST SHAPE window.



7) To adjust the balanced pincushion, press the or button.

8) When the balanced pincushion is adjusted, press the button to return to the ADJUST SHAPE window. BACK TO MAIN WINDOWS will be highlighted.

9) Press the button to return to the MAIN CONTROLS window, or

Smart Help After returning to MAIN CONTROLS . . .

...to continue to ADJUST SIDE ANGLES, start with step 5 under ADJUST SIDE ANGLES and follow the directions.

...to exit completely, press the button twice.

...to adjust only the BALANCED pincushion, follow steps 1 - 4 above, then press the button, and follow steps 7 - 9.

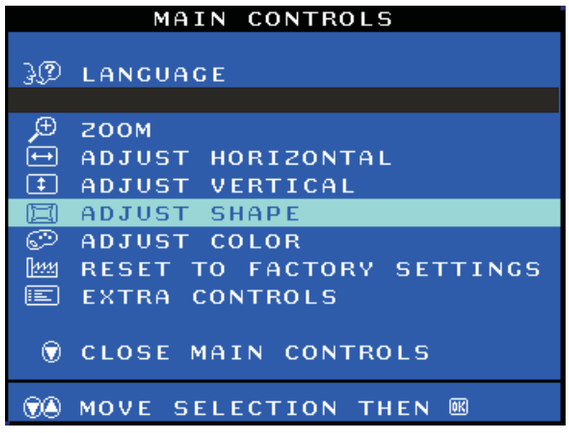
...to adjust only the PARALLELOGRAM, follow steps 1 - 4 above, then press the button, and follow steps 7 -9

ADJUST SIDE ANGLES

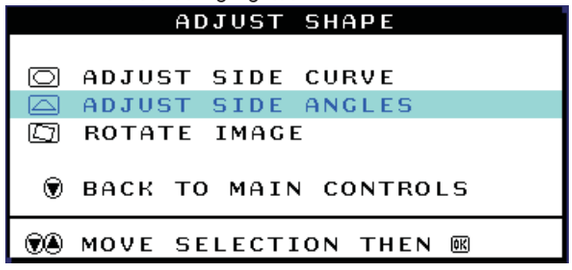
ADJUST SIDE ANGLES under ADJUST SHAPE allows you to adjust two of the five preset options. These two options are TRAPEZOID and PARALLELOGRAM. Note: use these features only when the picture is not square.

1) Press the button on the monitor. The MAIN CONTROLS window appears.

2) Press the button until ADJUST SHAPE is highlighted.

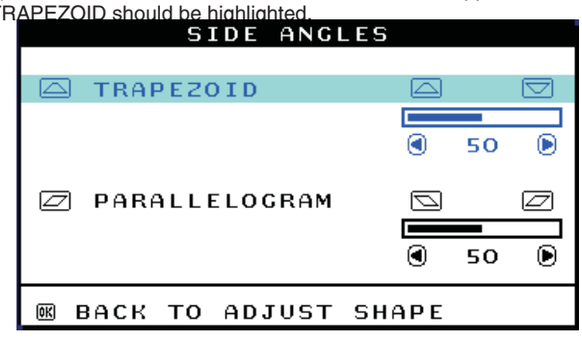


3) Press the button. The ADJUST SHAPE window appears. ADJUST SIDE CURVE should be highlighted.



4) Press the button to highlight ADJUST SIDE ANGLES.

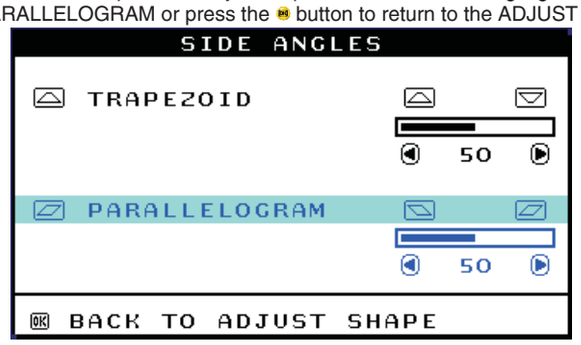
5) Press the button. The SIDE ANGLES window appears. TRAPEZOID should be highlighted.



6) To adjust the trapezoid, press the or button.

SHAPE window.

7) When the trapezoid is adjusted, press the button to highlight PARALLELOGRAM or press the button to return to the ADJUST



8) To adjust the parallelogram, press the or button.

9) When the parallelogram is adjusted, press the button to return to the ADJUST SHAPE window. BACK TO MAIN WINDOWS will be highlighted.

10) Press the button to return to the MAIN CONTROLS window, or press the button until ROTATE IMAGE is highlighted.

Smart Help After returning to MAIN CONTROLS . . .

...to continue to ROTATE IMAGE, start with step 5 under ROTATE IMAGE and follow the directions.

...to exit completely, press the button twice.

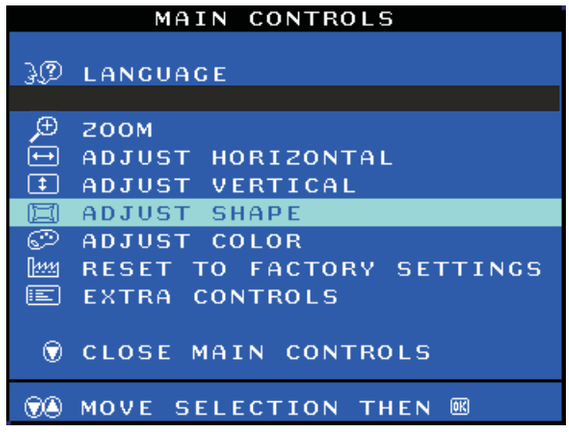
...to adjust only the PARALLELOGRAM, follow steps 1 - 4 above, then press the button, and follow steps 7 -9

ROTATE IMAGE (Not available in all models)

ROTATE IMAGE under ADJUST SHAPE allows you to adjust one of the five preset options. These two options are PINCUSHION and BALANCED pincushion. Note: use this feature only when the picture is not square.

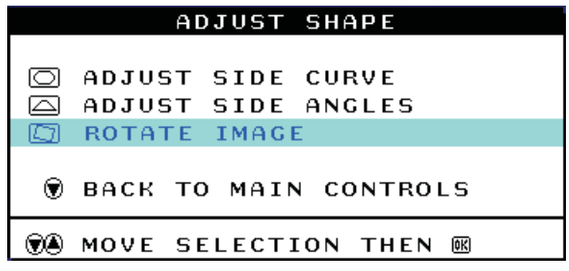
1) Press the button on the monitor. The MAIN CONTROLS window appears.

2) Press the button until ADJUST SHAPE is highlighted.



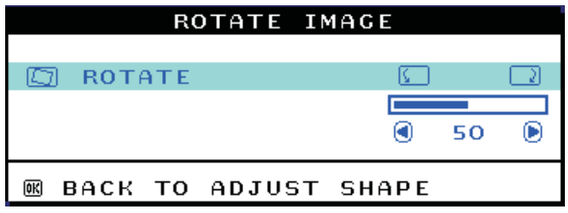
3) Press the button. The ADJUST SHAPE window appears. ADJUST SIDE CURVE should be highlighted.

4) Press the arrow until ROTATE IMAGE is highlighted.



OSD Adjustments (Continued)

5) Press the button. The ROTATE IMAGE window appears. ROTATE should be highlighted.



6) To adjust the rotation, press the or button.

7) When the rotation is adjusted, press the button to return to the ADJUST SHAPE window. BACK TO MAIN CONTROLS should be highlighted.

8) Press the button to return to MAIN CONTROLS.

Smart Help After returning to MAIN CONTROLS . . .

. . . to continue to ADJUST COLOR, press the button until ADJUST COLOR is highlighted. Next, start with step 3 under ADJUST COLOR and follow the directions.

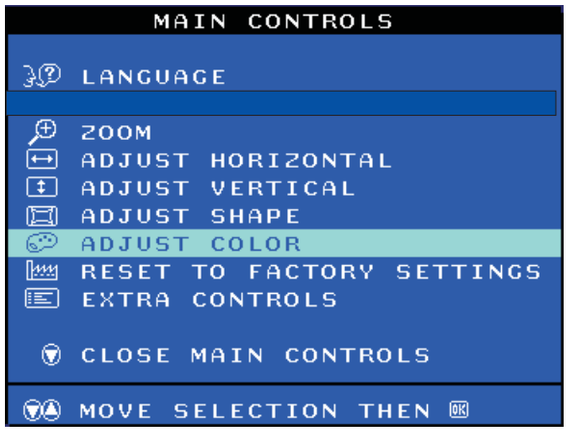
...to exit completely, press the button twice.

ADJUST COLOR

Your monitor has two preset options you can choose from. The first option is for GENERAL USE, which is fine for most applications. The second option is for GAMES, which is for playing computer games. When you select one of these options, the monitor automatically adjusts itself to that option. There is also a third option, USER PRESET, which allows you to adjust the colors on your screen to a setting you desire.

1) Press the button on the monitor. The MAIN CONTROLS window appears.

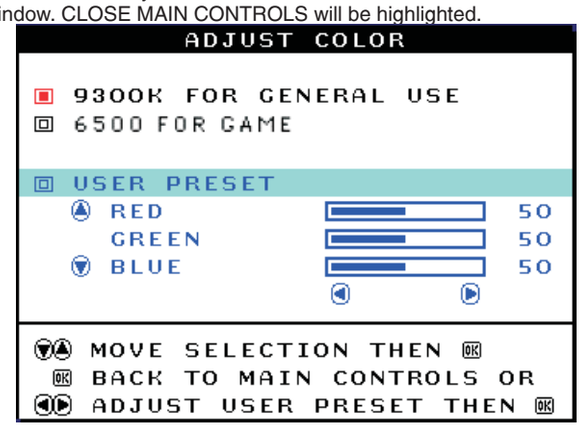
2) Press the button until ADJUST COLOR is highlighted.



3) Press the button. The ADJUST COLOR window appears.

4) Press the or button to highlight 9300K for GENERAL USE, 6500K for GAMES, or USER PRESET.

5) Once you have highlighted GENERAL USE or GAMES, press the button to confirm you selection and return to the MAIN CONTROLS window. CLOSE MAIN CONTROLS will be highlighted.



6a) ?If USER PRESET is highlighted, press the button to highlight RED. Next, press the LEFT CURSOR or RIGHT CURSOR button to adjust the color red.

6b) ?When finished with RED, press the button to highlight GREEN. Next, press the or button to adjust the color green.

6c) ?When finished GREEN, press the button to highlight BLUE. Next, press the or button to adjust the color blue.

6d) ?When all adjustments are complete, press the button to confirm your adjustments and return to the MAIN CONTROLS window. CLOSE MAIN CONTROLS will be highlighted.

Smart Help After returning to MAIN CONTROLS. . .

. . . to continue to RESET TO FACTORY SETTINGS, press the button until RESET TO FACTORY SETTINGS is highlighted. Next, start with step 3 under RESET TO FACTORY SETTINGS.

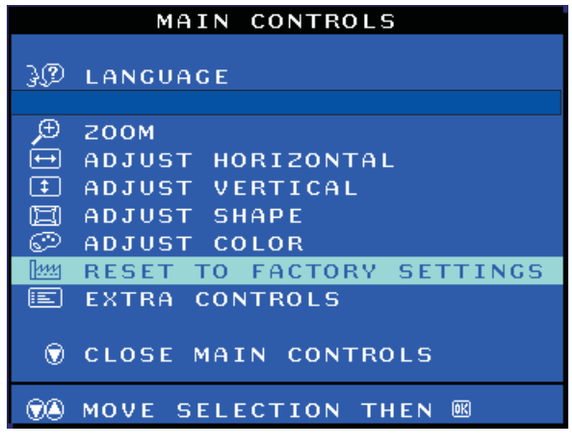
. . . to exit completely, press the button.

RESET TO FACTORY SETTINGS

RESET TO FACTORY SETTINGS returns everything in all the windows to factory presets.

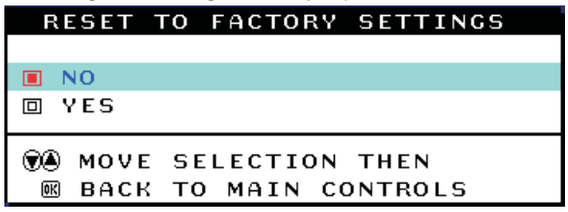
1) Press the button on the monitor. The MAIN CONTROLS window appears.

2) Press the button until RESET TO FACTORY SETTINGS is highlighted.



3) Press the button. The RESET TO FACTORY SETTINGS window appears.

4) Press the ▲ or ▼ button to select YES or NO. NO is the default. YES returns all settings to their original factory adjustments.



5) Press the ⏯ button to confirm your selection and return to the MAIN CONTROLS window. CLOSE MAIN CONTROLS will be highlighted.

Smart Help After returning to MAIN CONTROLS . . .

. . . to continue to EXTRA CONTROLS, press the ▲ button until EXTRA CONTROLS is highlighted. Next, start with step 3 under EXTRA CONTROLS.

. . . to exit completely, press the ⏯ button.

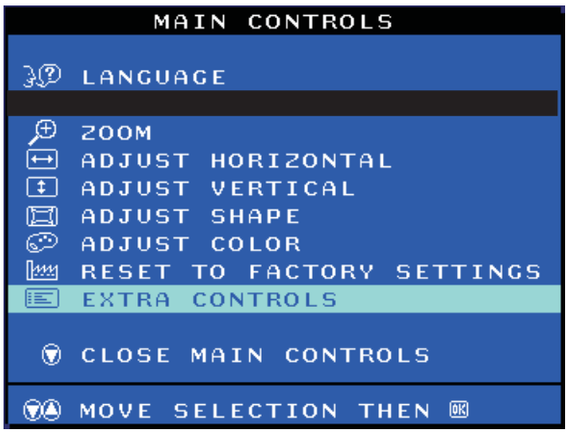
EXTRA CONTROLS

DEGAUSS

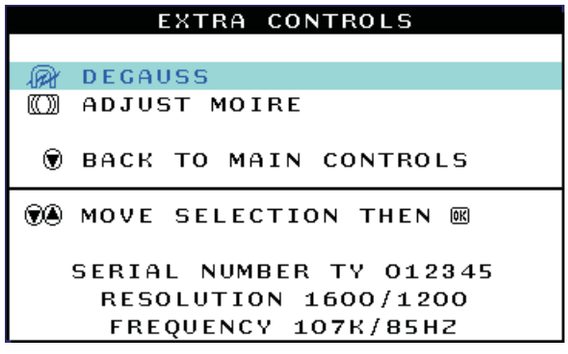
EXTRA CONTROLS is a set of three features, including DEGAUSS. Degaussing removes electromagnetic build up that may distort the color on your screen.

1) Press the ⏯ button on the monitor. The MAIN CONTROLS window appears.

2) Press the ▼ button until EXTRA CONTROLS is highlighted.



3) Press the ⏯ button. The EXTRA CONTROLS window appears. DEGAUSS will be highlighted.



4) To degauss your screen, press the ⏯ button. Your screen will be degaussed, then the MAIN CONTROLS window will reappear. CLOSE MAIN CONTROLS will be highlighted.

Smart Help After returning to MAIN CONTROLS . . .

. . . to continue to ADJUST MOIRE, press the ▲ button until EXTRA CONTROLS is highlighted. Next, start with step 3 under EXTRA CONTROLS, ADJUST MOIRE.

. . . to exit completely, press the ⏯ button.

ADJUST MOIRE (Not available in all models)

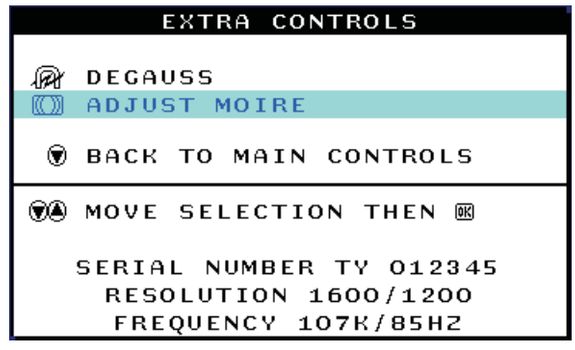
EXTRA CONTROLS is a set of three features, including ADJUST MOIRE. Moire is a fringe pattern arising from the interference between two superimposed line patterns. To adjust your moire, follow the steps below. Note: Use only if necessary. By activating ADJUST MOIRE, sharpness can be affected.

1) Press the ⏯ button on the monitor. The MAIN CONTROLS window appears.

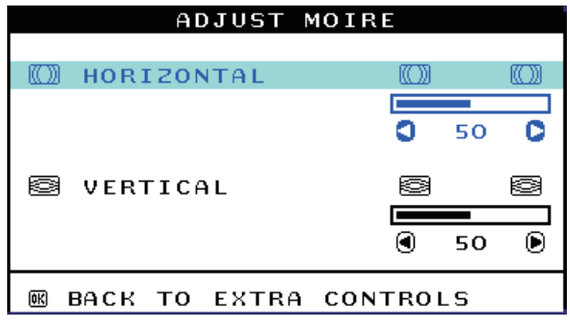
2) Press the DOWN CURSOR button until EXTRA CONTROLS is highlighted.

3) Press the ⏯ button. The EXTRA CONTROLS window appears. DEGAUSS will be highlighted.

4) Press the ▼ button until ADJUST MOIRE is highlighted.



5) Press the ⏯ button. The ADJUST MOIRE window appears. HORIZONTAL will be highlighted.

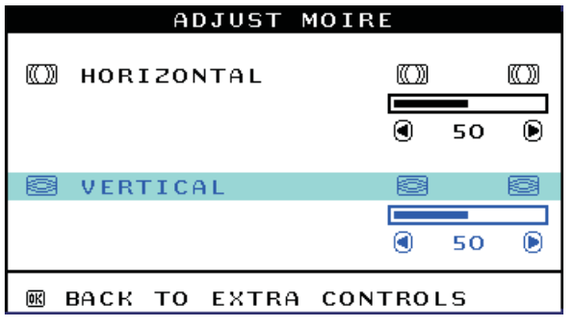


6) To adjust the horizontal moire, press the ◀ or ▶ button.

OSD Adjustments (Continued)

Go to cover page

7) When the horizontal moire is adjusted, press the button to highlight VERTICAL.



8) To adjust the vertical moire, press the or button.

9) When the vertical moire is adjusted, press the button to return to the EXTRA CONTROLS window. BACK TO MAIN CONTROLS will be highlighted.

Smart Help After returning to MAIN CONTROLS . . .

. . . to exit completely, press the button.

CLOSE MAIN CONTROLS

Warning and Notes

Warnings

1. Safety regulations require that the unit should be returned in its original condition and that components identical to the original components are used. The safety components are indicated by the symbol ⚠ .

2. In order to prevent damage to ICs and transistors, all high-voltage flash-overs must be avoided. In order to prevent damage to the picture tube, the method shown in Fig. 1 should be used to discharge the picture tube. Use a high-voltage probe and a multimeter (position DC-V). Discharge until the meter reading is **0 V** (after approximately 30 seconds).

3. **ESD**
All ICs and many other semiconductors are sensitive to electrostatic discharges (ESD). Careless handling during repair can drastically shorten their life. Make sure that during repair you are connected by a pulse band with resistance to the same potential as the ground of the unit. Keep components and tools also at this same potential.

4. When repairing a unit, always connect it to the AC Power voltage via an isolating transformer.

5. Be careful when taking measurements in the high-voltage section and on the picture tube panel.

6. It is recommended that saferty goggles be worn when replacing the picture tube.

7. When making adjustments,use plastic rather than metal tools. This will prevent any short-circuit or the danger of a circuit becoming unstable.

8. Never replace modules or other components while the unit is switched on.

9. Together with the defleciton unit, the picture tube is used as an integrated unit. Adjustment of this unit during repair is not recommended.

10. After repair, the wiring should be fastened in place with the cable clamps.

11. All units that are returned for service or repair must pass the original manufactures safety tests.

Notes

1. The direct voltages and waveforms are average voltages. They have been measured using the Service test software and under the following conditions :
   - Mode : 640 * 480 (31.5kHz / 60Hz)
   - Signal pattern : grey scale
   - Adjust brightness and contrast control for the mechanical mid-position (click position)

2. The picture tube panel has printed spark gaps. Each spark gap is connected between an electrode of the picture tube and the Aquadag coating.

3. The semiconductors indicated in the circuit diagram(s) and in the parts lists are completely interchangeable per position with the semiconductors in the unit, irrespective of the type indication on these semiconductors.

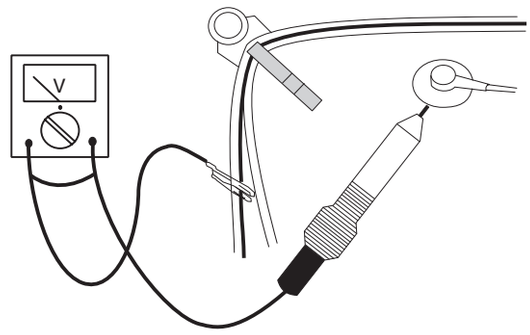


Fig.1

Mechanical Instructions

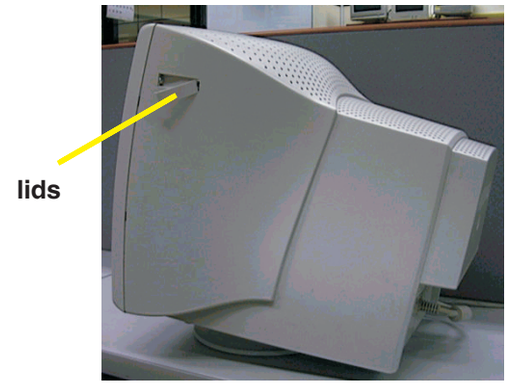
Go to cover page

0. General
To be able to perform measurements and repairs on the "circuit boards", these unit should placed in the service position first.

1.Remove the rear cover
-Remove right and left lib on the back cover
-Open 4 lids with "-" type screwdriver.
-Remove 4 screws at the bottom cabinet with "+" type screwdriver,refer fig 2.
-Remove out back cover.

2. Video panel
a.Cutoff all wire cable ties
b.Remove GRD wire between video shield and CRT rack.
c.Remove 1 screw between mains board rack and video shield
d. cutoff 1 cable tie on LOT wire
e.Remove GRD wire (1604)from video PCB to CRT rack.

3. Main panel
- Disconnect the degaussing coil (1113)from Main panel.
- Remove the video panel from CRT.
- Remove the "screw" of I/F cable from Main panel.
- Disconnect the CRT ground "M312" from Video panel.
- Disconnect the Hi-Pot cap from CRT.
- Disconnect yoke wire from "M401".
- Disconnect concellation connector(1402).
- Slide the main panel out of bottom tray.
- Connect yoke wire to "M401".
- Connect concellation connector(1402).".
- Place Main panel in service position as shown in Fig.1.
- Mount Video panel again on CRT.
- To connect Hi-Pot cap again.
- To connect "M312" again.



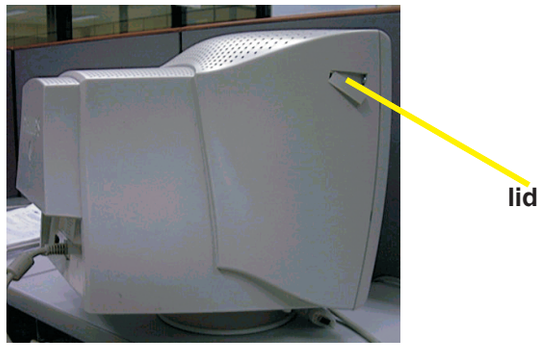


Fig.2

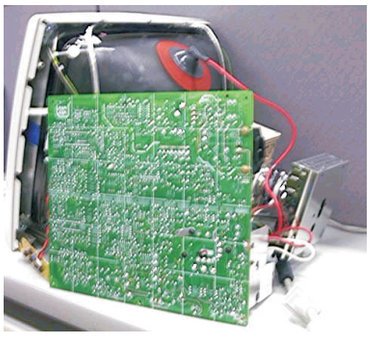


Fig.1

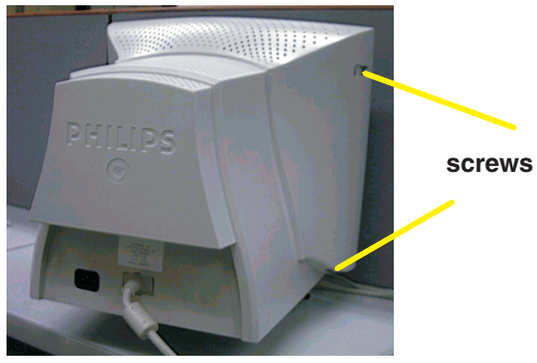


Fig.3

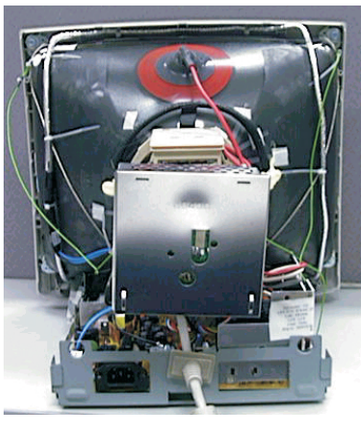
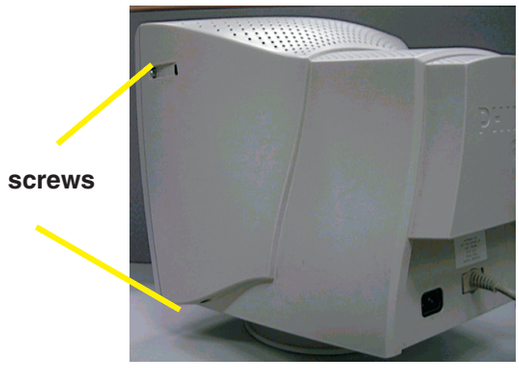
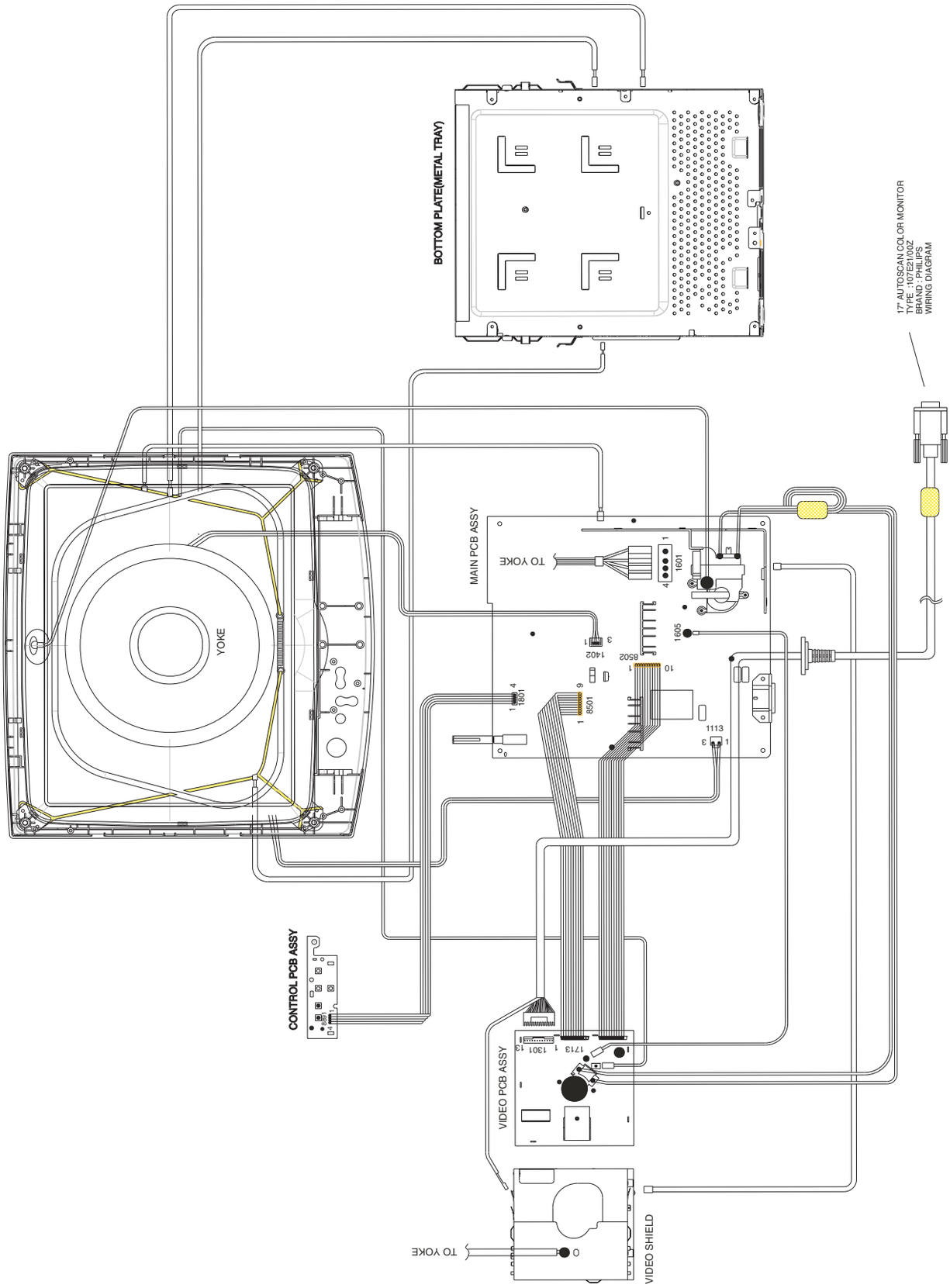


Fig.3



Back Forward

Wiring Diagram



Hex Data of DDC 1/2B

Go to cover page

```
**********************************************************************
                        EDID log file
**********************************************************************
Vendor/Product Identification
        ID Manufacturer Name      : PHL
        ID Product Code           : E005 (HEX.)
        ID Serial Number          : 4D2 (HEX.)
        Week of Manufacture       : 22
        Year of Manufacture       : 2000
EDID Version, Revision
        Version                   : 1
        Revision                  : 1
Basic Display Parameters/Features
        Video Input Definition    :  Analog Video Input
                                     0.700V/0.000V (0.70Vpp)
                                     without Blank-to-Black Setup
                                     Separate Sync
                                     without Composite Sync
                                     without Sync on Green
                                    no Serration required
        Maximum H Image Size      : 31
        Maximum V Image Size      : 23
        Display Transfer Characteristic : 2.87
                (gamma)
        Feature Support (DPMS)    :  Standby
                                     Suspend
                                     Active Off
        Display Type              : RGB color display
Color Characteristics
        Red   X coordinate        : 0.62
        Red   Y coordinate        : 0.345
        Green X coordinate        : 0.29
        Green Y coordinate        : 0.61
        Blue  X coordinate        : 0.155
        Blue  Y coordinate        : 0.065
        White X coordinate        : 0.283
        White Y coordinate        : 0.297
Established Timings
        Established Timings I
                                  : 720 x 400 @70Hz (IBM,VGA)
                                    640 x 480 @60Hz (IBM,VGA)
                                    640 x 480 @72Hz (VESA)
                                    640 x 480 @75Hz (VESA)
                                    800 x 600 @60Hz (VESA)
        Established Timings II    : 800 x 600 @72Hz (VESA)
                                    800 x 600 @75Hz (VESA)
                                    832 x 624 @75Hz (Apple,Mac II)
                                    1024 x 768 @70Hz (VESA)
                                    1024 x 768 @75Hz (VESA)
        Manufacturer's timings    :
Standard Timing Identification #1
        Horizontal active pixels  : 640
        Aspect Ratio              : 4:3
        Refresh Rate              : 85
Standard Timing Identification #2
        Horizontal active pixels  : 800
        Aspect Ratio              : 4:3
        Refresh Rate              : 85
Standard Timing Identification #3
        Horizontal active pixels  : 1024
        Aspect Ratio              : 4:3
        Refresh Rate              : 85
Standard Timing Identification #4
        Horizontal active pixels  : 1280
        Aspect Ratio              : 5:4
        Refresh Rate              : 60
Standard Timing Identification #5
        Horizontal active pixels  : 640
        Aspect Ratio              : 4:3
        Refresh Rate              : 100
Standard Timing Identification #6
        Horizontal active pixels  : 800
        Aspect Ratio              : 4:3
        Refresh Rate              : 99
Standard Timing Identification #7
        Horizontal active pixels  : 1280
        Aspect Ratio              : 4:3
        Refresh Rate              : 60
Standard Timing Identification #8
        Horizontal active pixels  : 1152
        Aspect Ratio              : 4:3
        Refresh Rate              : 75
Detailed Timing #1
        Pixel Clock (MHz)         : 25.18
        H Active (pixels)         : 640
        H Blanking (pixels)       : 160
        V Active (lines)          : 350
        V Blanking (lines)        : 99
        H Sync Offset (F Porch) (pixels): 16
        H Sync Pulse Width (pixels): 96
        V Sync Offset (F Porch) (lines) : 37
        V Sync Pulse Width (lines) : 2
        H Image Size (mm)         : 306
        V Image Size (mm)         : 230
        H Border (pixels)         : 0
        V Border (lines)          : 0
        Flags                     : Non-interlaced
                                  : Normal Display, No stereo
                                  : Digital Separate sync.
                                  : Negative Vertical Sync.
                                  : Positive Horizontal Sync.
Monitor Descriptor #2

        Serial Number             :  TY  123456

Monitor Descriptor #3

        Monitor Name              : PHILIPS 107S

Monitor Descriptor #4
        Monitor Range Limits
        Min. Vt rate Hz           : 50
        Max. Vt rate Hz           : 160
        Min. Horiz. rate kHz      : 30
        Max. Horiz. rate kHz      : 71
        Max. Supported Pixel      : 110

Extension Flag                    : 0
Check sum                         : 5A (HEX.)
```

```
**********************************************************************
                    EDID data (for philips CRT)
**********************************************************************

 0: 00   1: ff   2: ff   3: ff   4: ff   5: ff   6: ff   7: 00
 8: 41   9: 0c  10: 05  11: e0  12: d2  13: 04  14: 00  15: 00
16: 16  17: 0a  18: 01  19: 01  20: 68  21: 1f  22: 17  23: bb
24: e8  25: d5  26: f8  27: 9e  28: 58  29: 4a  30: 9c  31: 27
32: 0f  33: 48  34: 4c  35: ad  36: ee  37: 00  38: 31  39: 59
40: 45  41: 59  42: 61  43: 59  44: 81  45: 80  46: 31  47: 68
48: 45  49: 67  50: 81  51: 40  52: 71  53: 4f  54: d6  55: 09
56: 80  57: a0  58: 20  59: 5e  60: 63  61: 10  62: 10  63: 60
64: 52  65: 08  66: 32  67: e6  68: 10  69: 00  70: 00  71: 1a
72: 00  73: 00  74: 00  75: ff  76: 00  77: 20  78: 54  79: 59
80: 20  81: 20  82: 31  83: 32  84: 33  85: 34  86: 35  87: 36
88: 0a  89: 20  90: 00  91: 00  92: 00  93: fc  94: 00  95: 50
96: 48  97: 49  98: 4c  99: 49 100: 50 101: 53 102: 20 103: 31
104: 30 105: 37 106: 53 107: 0a 108: 00 109: 00 110: 00 111: fd
112: 00 113: 32 114: a0 115: 1e 116: 47 117: 0b 118: 00 119: 0a
120 : 00 121: 20 122: 20 123: 20 124: 20 125: 20 126: 00 127: 5a
```

DDC Instructions

1. General

DDC Data Re-programming

In case the main EEPROM with Software DDC which store all factory settings were replaced because a defect,repaired monitor the serial numbers have to be re-programmed.

It is advised to re-soldered the main EEPROM with Software DDC from the old board onto the new board if circuit board have been replaced, in this case the DDC data does not need to be re-programmed.

Additional information

Additional information about DDC (Display Data Channel) may be obtained from Video Electronics Standards Association (VESA). Extended Display Identification Data(EDID) information may be also obtained from VESA.

DDC EDID structure
For the monitor : Standard Version 3.0
Structure Version 1.2

2. System and equipment requirements

1. An i486 (or above) personal computer or compatible.
2. Microsoft operation system Windows 95/98.
3. EDID301.EXE program (3138 106 10103) shown as Fig. 1
4. Software DDC Alignment kits (4822 310 11184) shown as Fig. 2.

The kit contents: a. Alignment box x1
b. Printer cable x1
c. D-Sub cable x1

Note: The EDID301.EXE (Release Version 1.54, 2000.04.25)is a windows-based program, which cannot be run in MS-DOS.

Figure 1 Diskette with EDID301.EXE

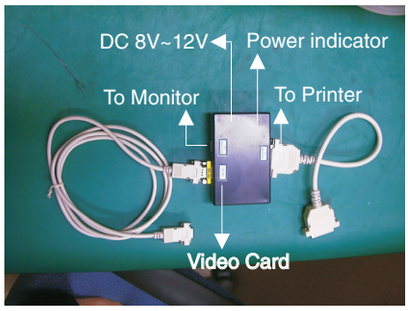
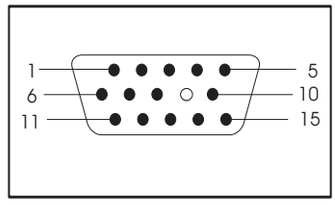


Fig. 2 Alignment Kits

3. Pin assignment

A. 15-pin D-Sub Connector

The 15-pin D-sub connector (male) of the signal cable on the 3rd row for DDC feature :



Pin No.	Assignment	Pin No.	Assignment
1	Red video input	9	No pin
2	Green video input	10	Logic ground
3	Blue video input	11	Identification output - Connected to pin 10
4	Identification output - Connected to pin 10	12	Serial data line(SDA)
5	Ground	13	H.Sync
6	Red video ground	14	V.Sync(VCLK for DDC)
7	Green video ground	15	Data clock line(SCL)
8	Blue video ground		

DDC Instructions

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4. Configuration and procedure

Following descirptions are the connection and procedure for Software DDC, the main EEPROM can be re-programmed along with Software DDC by enabling "factory memory data write"function on the DDC program (EDID301.EXE).

Initialize alignment box

In order to avoid that monitor entering power saving mode due to sync will cut off by alignment box, it is necessary to initialize alignment box before running programming software (EDID301.EXE). Following steps show you the procedures and connection.

Step 1: Supply 8~12V DC power source to the Alignment box by plugging a DC power cord or using batteries.
Step 2: Connecting printer cable and video cable of monitor as Fig. A
Step 3: Run the EDID301.EXE program until the main menu appears. This is for initialize alignment box.

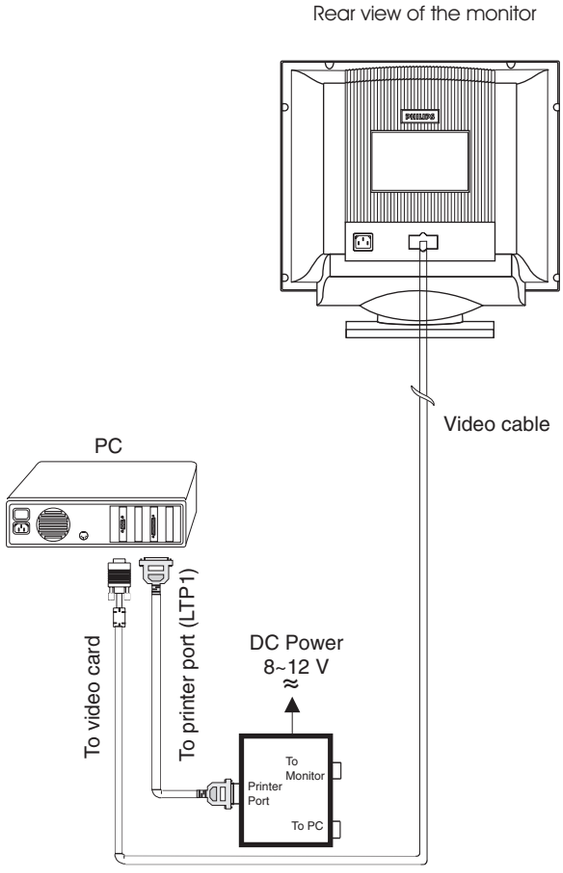


Fig. A

Re-programming Software DDC

Step 1: After initialize alignment box, connecting all cables and box as Fig. 3
Step 2: Follow the steps on DDC re-programming instructions to staring re-programming.

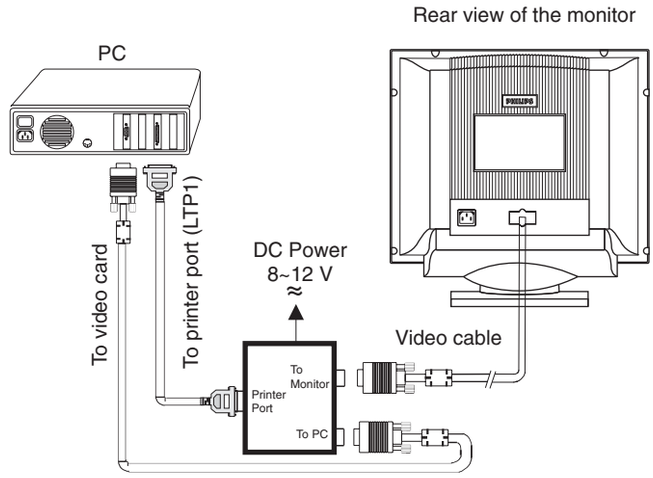


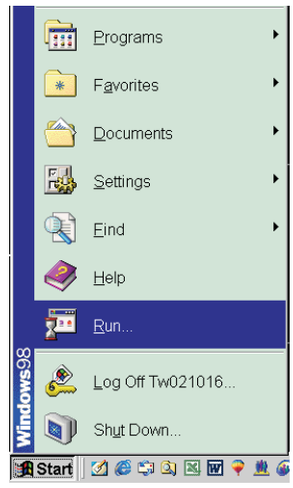
Fig. 3

5. DDC re-programming instructions

Start on DDC program

Start Microsoft Windows.

1. Insert the disk containing EDID301.EXE program into floppy disk drive.
2. Click Start, choose Run at start menu of Windows 95/98.



4. At the submenu, type the letter of your computer's floppy disk drive followed by :EDID301 (for example, A:\EDID301, as shown in Fig. 5).

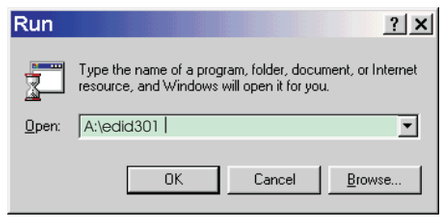


Fig. 5

DDC Instructions

5. Click [OK] button. The main menu appears (as shown on Fig. 6).

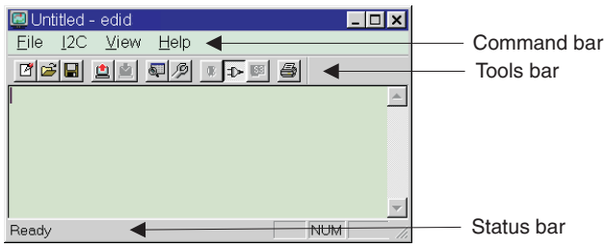
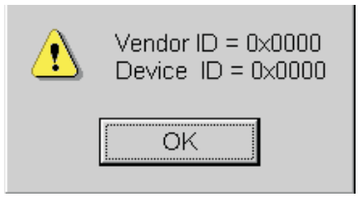


Fig. 6

Note: If the connection is improper, you will see the following error message before entering the main menu. Meanwhile, the (read EDID) function will be disable. At this time, please make sure all cables are connected correctly and fixedly, and the procedure has been performed properly.



Loading DDC data from monitor

1. Click icon on the tools bar to bring up the Configuration Setup windows as Fig.7
2. Select the DDC2B as the communication channel.
3. Enable Factory memory data write function and fill in page address "FA" to the block.
4.. Click [OK] button to confirm your selection.

Note: The Factory memory data write function will allow EDID301 to rewrite the serial numbers of Software DDC data in main EEPROM.

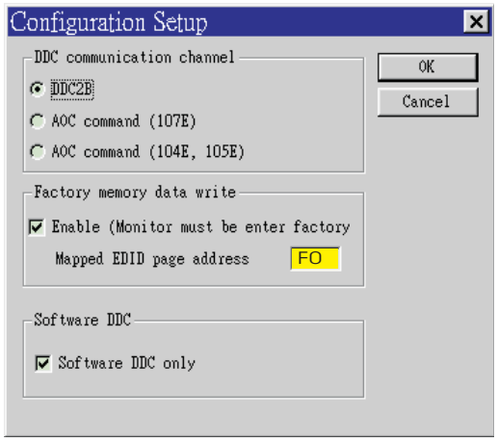
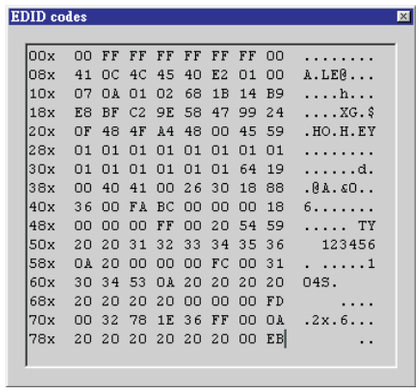


Fig. 7

4. Click icon to read DDC EDID data from monitor. The EDID codes will display on screen as following. (The EDID codes are dependent on the model.)



Note: During the loading, EDID301 will verify the EDID data which just loaded from monitor before proceed any further function, once the data structure of EDID can not be recognized, the following error message will appear on the screen (Fig. 8). Please confirm following steps to avoid this message.

1. The data structure of EDID was incorrect.
2. Software DDC Data that you are trying to load data is empty.
3. Wrong communication channel has set at configuration setup windows.
4. Cables loosed or poor contact of connection.
5. Software DDC only is disable.

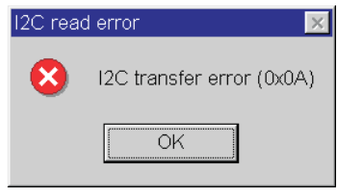
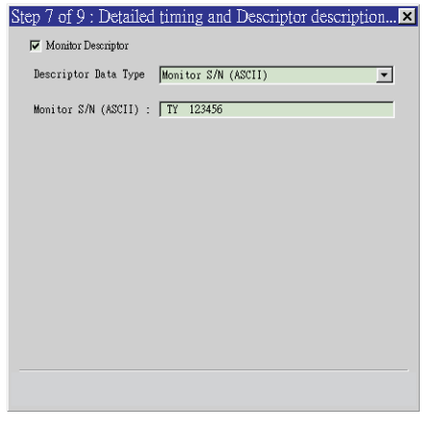


Fig. 8

Modify DDC data (Serial No.)

1. Click icon on the tool bar.
2. Click [Next>] till the Step 7 of 9 window appears.
3. Type the new Serial No. (for example, TY 123456).
4. Click [Next>] till the last step window appears, then click [Finish] to exit the Step window.


Step 7 of 9 : Detailed timing and Descriptor description...
Monitor Descriptor
Descriptor Data Type
Monitor S/N (ASCII)
Monitor S/N (ASCII) :
TY 123456

DDC Instructions

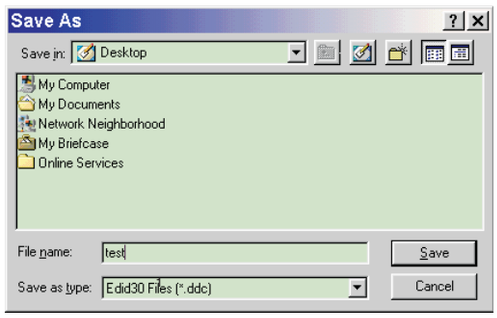
Go to cover page

Write DDC data to monitor

1. Click icon from the tools bar to starting rewrite DDC data.
2. Click for confirmation.

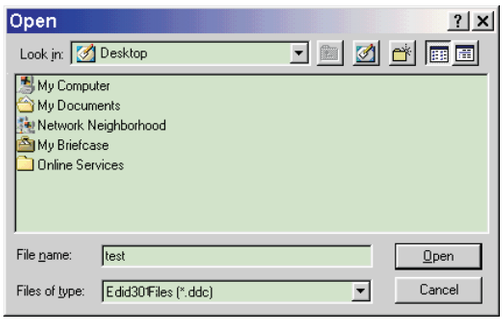
Save DDC data as a file
Sometimes, you maybe need to save DDC data as a text file for using on other DDC chip. To save DDC data, follow the steps below:

1. Click icon on the tools bar and type a file name you like. The file format is ddc type which can be open by Microsoft WordPad.
2. Click Save button.



Load DDC data from file

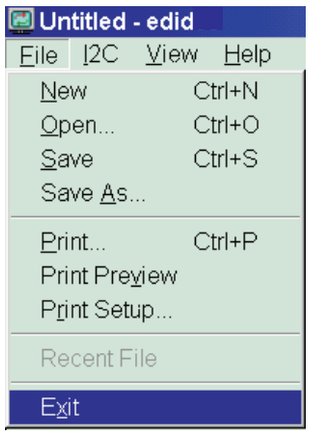
1. Click from the tools bar.
2. Select the file you want to open.
3. Click Open Button.



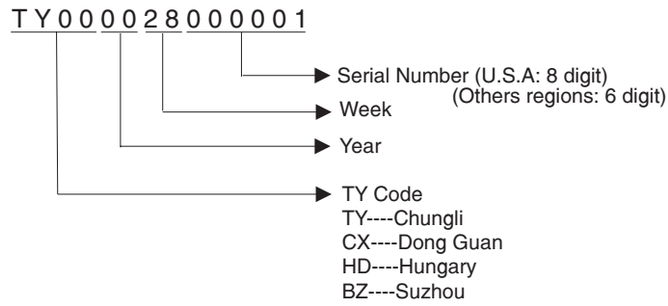
4. Now you can re-programming DDC data which you just loaded from a file, please be confirmed that model and serial number are correct and match with the monitor you are trying to re-write.

Exit DDC program

1. Click file command on the command bar then select Exit.



Definition of Serial Number



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Electrical Adjustments

0. General

When carry-out the electrical settings in many cases a video signal must be applied to the monitor. A computer with :

- ATI GPT-1600 (4822 397 10065), Mach 64 (up to 107kHz)

are used as the video signal source. The signal patterns are selected from the "service test software" package, see user guide 4822 727 21046 (GPT-1600).

0.1 This monitor has 8 factory-preset modes as below.

720 x 400 31.5 kHz/70 Hz	1024 x 768 68.7 kHz/85 Hz
640 x 480 31.5 kHz/60 Hz	
640 x 480 43.0 kHz/85 Hz	
800 x 600 46.9 kHz/75 Hz	
800 x 600 53.6 kHz/85 Hz	
1024x768 60.0 kHz/75 Hz	
1280 x 1024 64.0kHz/60Hz	

14 factory-preload modes as below

640 x 350 31.5 kHz/70 Hz	800 x 600	48.0 kHz/72 Hz
640 x 350 37.8 kHz/85 Hz	800 x 600	64.0 kHz/100 Hz
640 x 480 37.5 kHz/75 Hz	832 x 624	49.7 kHz/75 Hz
640 x 480 37.8 kHz/72 Hz	1024 x 768	48.3 kHz/60 Hz
640 x 480 50.5 kHz/100 Hz	1024 x 768	56.5 kHz/70 Hz
720 x 400 38.0 kHz/85 Hz	1152 x 864	67.5 kHz/75 Hz
800 x 600 37.90kHz/60Hz	1280 x 960	60.0 kHz/60 Hz

0.2 With normal VGA card:
If not using the ATI card during repair or alignment, The service engineer also can use this service test software adapting with normal standard VGA adaptor and using standard VGA mode 640 x 480, 31.5 kHz/60 Hz (only) as signal source.

0.3 AC/DC Measurement:
The measurements for AC waveform and DC figure is based on 640 x 480 31.5 kHz/60 Hz resolution mode with test pattern "gray scale". Power input: 110V AC

1. B+ supply voltage (3145) 83Vdc

- Apply a video signal in the 640 x 480 with 31.5 kHz/60Hz mode.
- Select the "cross-hatch" pattern.
- Set the brightness control and the contrast control to the minimum position.
- Pre-set trimming potentiometer 3145(+) and 3561(EHT) in mid-position.
- Set Vg2 (screen) to fully Counter-clockwise (zero beamcurrent).
- Connect a dc voltmeter between the joint of capacitor 2151 and ground (common ground).
- Set the B+ trimming potentiometer 3145 so that the reading on the dc voltmeter is 83 V +/- 0.2 Vdc.

2. High-voltage EHT (3561)

- Apply a video signal in the 640 x 480 with 31.5 kHz/60Hz mode.
- Select the "cross-hatch" pattern.
- Set the brightness control and the contrast control to the minimum position.
- Turn off the power.
- Connect a dc voltmeter between the joint of capacitor c2601 and ground (common ground).
- Turn on the power.
- Set the EHT trimming potentiometer 3561 so that the reading on the dc voltmeter is 66.0V+/-0.2V(for PHL tube) or 67.0V+/- 0.2V (for CPT tube)

3.Monitor the following auxiliary voltages.

SOURCE ACROSS 7114 Pin and GRN	+5 V +/- 0.25 VDC
SOURCE ACROSS C2155	-6.1 V +/- 0.3 VDC.
SOURCE ACROSS C2141	+8.0 V +/- 0.4 VDC.
SOURCE ACROSS C2153	+13.1V +/- 1.0 VDC.
SOURCE ACROSS C2154	- 13.1V +/- 1.0 VDC.
SOURCE ACROSS C2151	+83.0V +/- 1.0 VDC.
SOURCE ACROSS C2609	- 170 V +/- 15.0 VDC.
SOURCE ACROSS C2152(+ to Gnd)	+180.0V +/-2.0 VDC.

4. General conditions for alignment

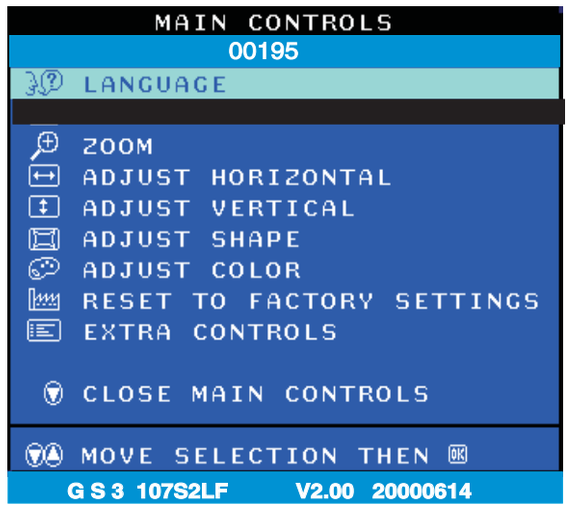
4.1 During all alignments, supply a distortion free AC mains voltage to set via an isolating transformer with low internal impedance.
4.2 Align in pre-warmed condition, at least 30 minutes warm-up with nominal picture brightness.
4.3 Purity, geometry and subsequent alignments should be carried out in magnetic cage with correct magnetic field.

Northern hemisphere : H=0, V=450 mG, Z=0
Southern hemisphere : H=0, V=-500 mG, Z=0
Equatorial Support : H=0, V=0 mG, Z=0

4.4 All voltages are to be measured or applied with respect to ground.
Note: Do not use heatsink as ground.
4.5 Adjust brightness controls to center position except for contrast control which should be set to MAX.

5. To access factory mode:

- Turn off monitor (don't turn off PC)
- Press " ◀▶ " and " ⏻ " simultaneously on the front control panel ,then press " ⊠ ",wait till the OSD menu with characters " factory mode (below OSD menu)" come on the screen of monitor.



- If OSD menu disappears on the screen of monitor, press " ⊠ " again (anytime), then the OSD menu comes on the screen again.
- using " ▲▼ " : to select OSD menu.
- using " ◀▶ " : to increase or decrease the setting.

(Please also refer to page 8 to page 15 for OSD adjustment)

- Using " ⊠ " to confirm the selection.

5.1. To leave factory mode

* After alignment of factory mode, turn off monitor (if you do not turn off monitor, the OSD menu is always at the factory mode), then turn on monitor again (at this moment, the OSD menu goes back to user mode).

Electrical Adjustments (Continued)

Go to cover page

6. Picture geometry setting

- Apply a video signal with cross-hatch pattern.
- Apply a video signal in the 1024 x 768 with 68.7 kHz/85 Hz mode.
- Set contrast control at Max. position, and brightness control in the mid-point.

6.4 Alignment of horizontal geometry and vertical geometry
6.4.1 Adjust the H-width to 306 mm
6.4.2 Adjust the H-phase to center position.
6.4.3 Adjust V-size to 230mm.
6.4.4 Adjust V-Position to center.
Adjust/Trapezium/pincushion
6.4.5 Adjust picture tilt via I²C BUS for correct top/bottom lines.
6.4.6 Adjust the top and bottom corner by I²C to straight vertical lines of the left and right edge.
6.4.7 Adjust the parallelogram by I²CBUS to get optimum vertical line.
6.4.8 Adjust the unbalance pin by I²C BUS to get optimum vertical line.
6.4.9 Adjust the unbalance Vertical linearity balance by I²C BUS to get optimum vertical linearity balance.
6.4.10Adjust the unbalance Vertical linearity by I²C to get optimum vertical linearity.
6.5 Adjust size/centering/trapezium/pincushion/parallelogram of all other preset modes (TABLE1-TABLE8) via I²C bus.
6.6 Preset factory preload timin TABLE9-TABLEE22 according to step 6.5 values.

7. Alignment of Vg2 cut-off point, white tracking

Equipment : 1. Video Test Generator-801GC (Quantum Data)
2. Color-analyzer (Minolta CA-100)
VG2 [(screen), at the bottom of the L.O.T.].
* Apply a video signal in the 1024 x 768 with 68.7 kHz/85 Hz mode, select the "full white pattern" (sizes 306 x 230 mm).
* Use color-analyzer (Minolta CA-100) to adjust cutoff and white uniformity.

OSD R/G/B cut-off and R/G/B gain can be accessed, with initial data:
9300 °K
R cutoff = 25%, R gain = 65% (I² C)
G cutoff = 25%, G gain = 65% (I² C)
B cutoff = 25%, B gain = 65% (I² C)
6500 °K
R cutoff = 25%, R gain = 55% (I² C)
G cutoff = 25%, G gain = 55% (I² C)
B cutoff = 25%, B gain = 55% (I² C)

Brightness = 50%, Sub-Contrast = 85%, ABL = 50% (I² C)

Step 1: To press power button switch and left & right simulaneously to entert the character "FACTORY MODE" as shown in Fig.2.1, press " " to access the OSD menu for R/G/B gain & cutoff as shown in Fig. 2.2.
Step 2: Press " " for function selection as shown in Fig. 2.2.

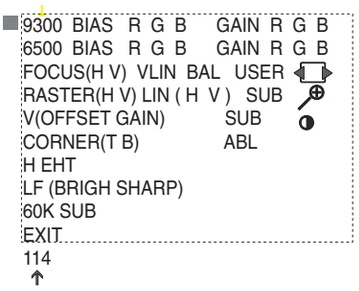

9300 BIAS R G B GAIN R G B
6500 BIAS R G B GAIN R G B
FOCUS(H V) VLIN BAL USER
RASTER(H V) LIN (H V) SUB
V(OFFSET GAIN) SUB
CORNER(T B) ABL
H EHT
LF (BRIGH SHARP)
60K SUB
EXIT
114

Fig. 2.2

BIAS R G B : R(red) G(green) B(blue) cutoff
GAIN R G B : R(red) G(green) B(blue) gain
V FOCUS : Vertical Focus
VLIN BAL : Vertical Linearity Balance
USER : Horizontal size range
RASTER H: Horizontal DC (raster) Shift
RASTER V: Vertical DC (raster) Shift
HLIN : Horizontal Linearity
V LIN : Vertical Linearity
SUB : Zoom range
SUB : Sub Contrast
V OFFSET : Vertical offset
V GAIN : Vertical Gain
ABL : Auto Beam Limit
T CORNER: Corner Correctionof TOP
B CORNER: Corner Correctionof BOTTOM
H EHT : Horizontal Extensive High Tension
LF : Light Frame
60K SUB : H-Size limit

7.2 Connect the video input, set brightness control at center, and contrast control at maximum
7.3
set R,G,B cut-off at 127 9300k and 6500K(EEPROM preload value)
R,G,B gain at 180 9300k and 6500K(EEPROM preload value)
ABL at 127 9300k and 6500K(EEPROM preload value)
SUB-CON at 218 (EEPROM preload value)
7.4 Adjust 9300K color:
With the help of a factory calibrated color analyzer CA 100
set low R,G,B scale 100=0.12FL,x=283,y=297
Adjust Vg1 until brightest gun at 100 on low brightness scale.
7.5 Adjust R,G,B cut-off for all gun reading to get 100 on low brightness scale.

7.5 Adjust R,G,B cut-off for all gun reading to get 100 on low brightness scale.
7.6 Set Ca100 high R,G,B scale 100 = 41+/- 1FL,X=283,y=297
Adjust G gain at 100 scale on high brightness scale.
7.7 Adjust R,B gain so that blue and green havng as red on the high brightness scale
7.8 Set contrast at minimum and repeat 7.5,7.6,7.7,until RGB three guns get same readings on low and high brightness scale.
7.9 Adjust 6500K color:
With the help of a factory calibrated color analyzer CA 100
set low R,G,B scale 100=0.12FL,x=313,y=329
Adjust Vg1 until brightest gun at 100 on low brightness scale.
7.10 Adjust R,G,B cut-off for all gun reading to get 100 on low brightness scale.
7.11 Set CA100 high R,G,B scale 100 = 41+/- 1FL,X=313,y=329
Adjust G gain at 100 scale on high brightness scale.
7.12 Adjust R,B gain so that blue and green have the same reading as red on the high brightness scale
7.13 Set contrast at minimum and repeat 7.10,7.11,7.12,until RGB three guns get same readings on low and high brightness scale.
7.14 Adjust SUB-CON to get Y=41+/-1FL.
7.15 Apply full white pattern, adjust ABL to reach 30 +/- 1FL(C MAX.)
7.16 Check full white at contrast and brightness at minimum, the foreground shall be extinguished.

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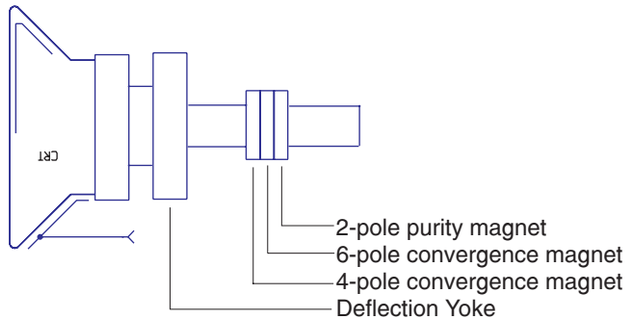
Electrical Adjustments (Continued)

8. Focus adjustment

Apply a signal of " @ " character. at 68.7 kHz/85 Hz mode set the brightness to mid-position , contrast to max - position and adjust the focus for optimal sharpness in the area within 2/3 from the screen center.

9. Loading DDC code

The DDC HEX data should be written into the EEPROM (7803,7804) by EDID301.EXE Program(3138 106 10103) and software DDC Alignment kits (4822 310 11184).



10. Purity adjustment

- Make sure the monitor is not exposed to any external magnetic field.
- Produce a full red pattern on the screen, adjust the purity magnet rings on the PCM assy (on CRT) to obtain a complete field of the color red. This is done by moving the two tabs (2-pole) in such a manner that they advance in an opposite direction but at the same time to obtain the same angle between the two tabs, which should be approximately 180 degree.
- Check by full green pattern and full blue pattern again to observe their respective color purity.

11. Static convergence

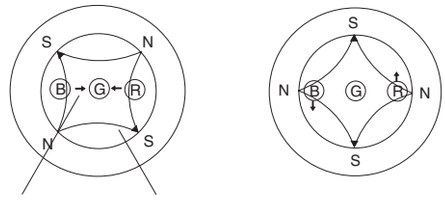
Introduction

Slight deviation in the static convergence can be corrected by using two permanent pairs of magnets which are fitted around the neck of the CRT. These are the 4-pole magnet and the 6-pole magnet.
The 4-pole magnet move the outermost electron beams (R and B) parallel in the opposite direction from the other. The 6-pole magnet moves the outermost electron beam (R, B and G) parallel in the opposite direction from the other.
The magnetic field of the above magnets do not affect the center of the CRT neck.

Setting

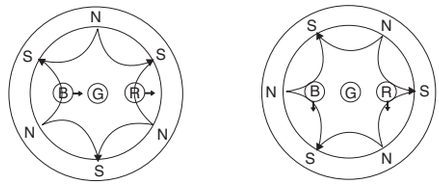
- Before the static convergence setting can be made, the monitor must be switched on for 30 minutes.
- The focus setting must be made correctly.
- Signal: 640 * 480, 31.5 kHz/60 Hz mode.
- Set the tabs of the 4-pole magnet in the neutral position. This is when the tabs are opposite one another. In this position the magnets do not affect the deflection of the R and B electron beams.
- Set the tabs of the 6-pole magnet in the neutral position. This is when the tabs are opposite one another. In this position the magnets do not affect the deflection of the R, B, and G electron beams.
- First set the 4-pole magnet optimally.
- Then set the 6-pole magnet optimally.
- If the convergence is not now optimal, then adjust to the optimal setting with the 4-pole magnet and then with the 6- Pole magnet again.
- Set the tabs of the 6-pole magnet in the neutral position. This is when the tabs are opposite one another. In this position the magnets do not affect the deflection of the R, B, and G electron beams.
- First set the 4-pole magnet optimally.
- Then set the 6-pole magnet optimally.
- If the convergence is not now optimal, then adjust to the optimal setting with the 4-pole magnet and then with the 6- pole magnet again.

4-pole — Beam motion producced by the 4-pole convergence magnet



Beam displacement direction — Magnetic flux lines

6-pole — Beam motion producced by the 6- pole convergence magnet



Safety test requirements

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All units that are returned for service or repair must pass the original manufactures safety tests. Safety testing requires both **Hipot** and **Ground Continuity** testing.

HI-POT TEST INSTRUCTION

1. Application requirements

1.1 All mains operated products must pass the Hi-Pot test as described in this instruction.

1.2 This test must be performed again after the covers have been refitted following the repair, inspection or modification of the product.

2. Test method

2.1 Connecting conditions

2.1.1 The test specified must be applied between the parallel-blade plug of the mainscord and all accessible metal parts of the product.

2.1.2 Before carrying out the test, reliable conductive connections must be ensured and thereafter be maintained throughout the test period.

2.1.3 The mains switch(es) must be in the "ON" position.

2.2 Test Requirements

All products should be HiPot and Ground Continuity tested as follows:

Condition	HiPot Test for products where the mains input range is Full range(or 220V AC)	HiPot Test for products where the mains input is 110V AC(USA type)	Ground Continuity Test requirement
Test voltage	2820VDC (2000VAC)	1700VDC (1200VAC)	Test current: 25A,AC Test time: 3 seconds(min.) Resistance required: <=0.09+R ohm, R is the resistance of the mains cord.
Test time (min.)	3 seconds	1 second	
Trip current (Tester)	set at 100 uA for Max. limitation; set at 0.1 uA for Min. limitation	5 mA	
Ramp time	set at 2 seconds		

2.2.1 The test with AC voltage is only for production purpose, Service center shall use DC voltage.

2.2.2 The minimum test duration for Quality Control Inspector must be 1 minute.No breakdown during the test.

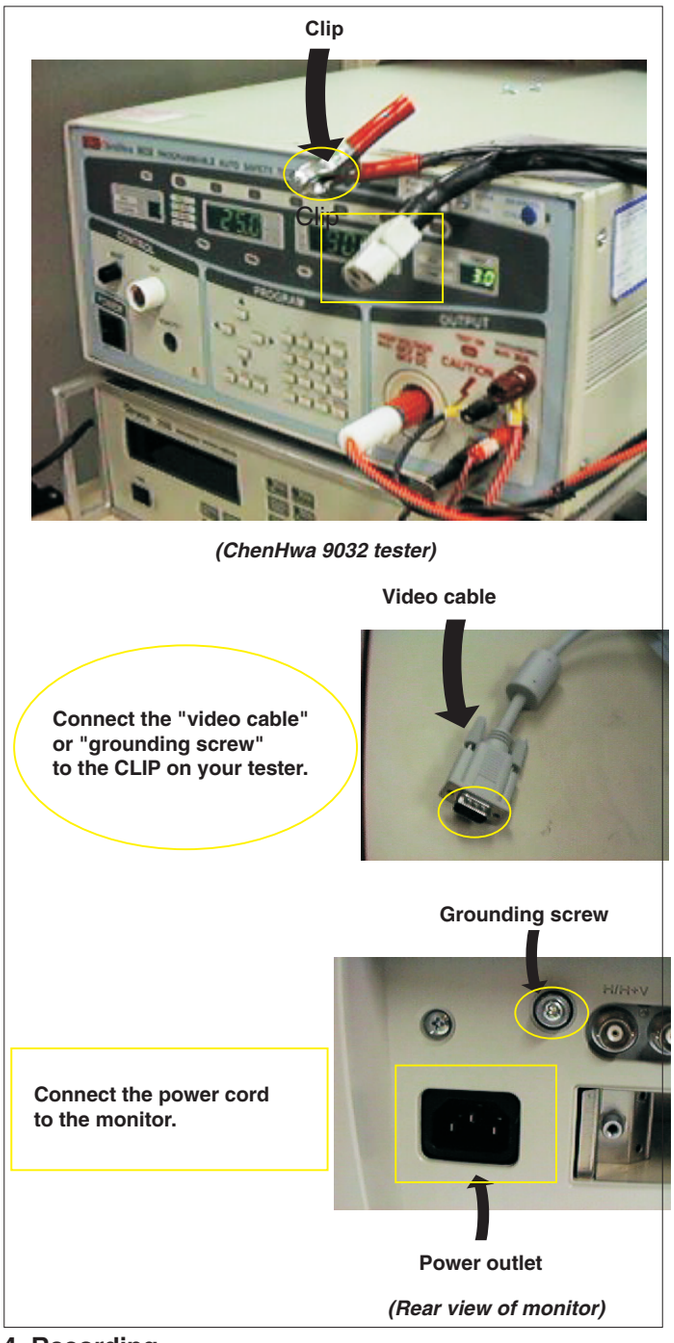
2.2.3 The test voltage must be maintained within the specified voltage + 5%.

2.2.4 The grounding blade or pin of mains plug must be conducted with accessible metal parts.

3. Equipments and Connection

3.1. Equipments
For example :
- ChenHwa 9032 PROGRAMMABLE AUTO SAFETY TESTER
- ChenHwa 510B Digital Grounding Continuity Tester
- ChenHwa 901 (AC Hi-pot test), 902 (AC, DC Hi-pot test) Withstanding Tester

3.2. Connection
* Turn on the power switch of monitor before Hipot and Ground Continuity testing.



4. Recording

Hipot and Ground Continuity testing records have to be kept for a period of 10 years.

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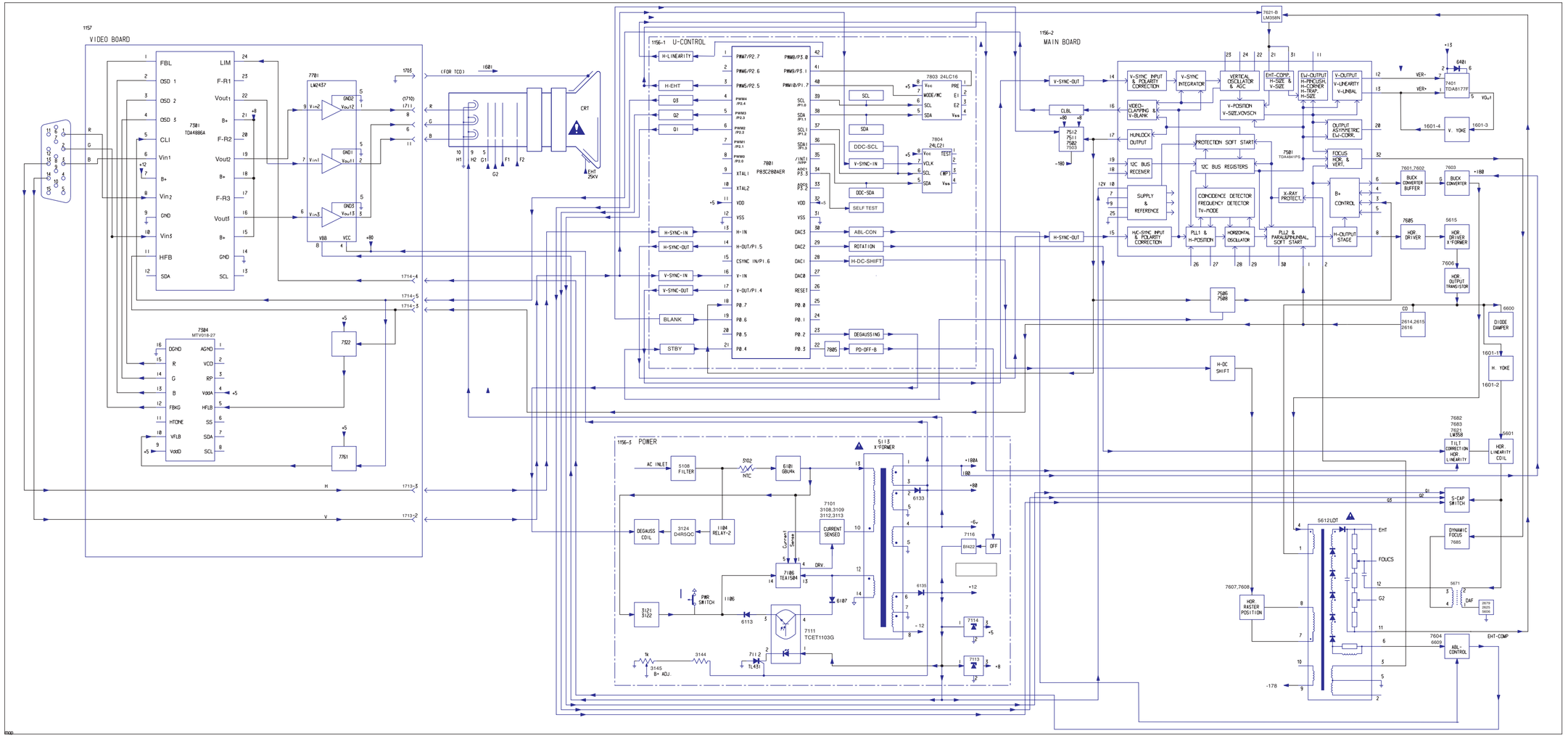
Block diagram



Video Schematic Diagram

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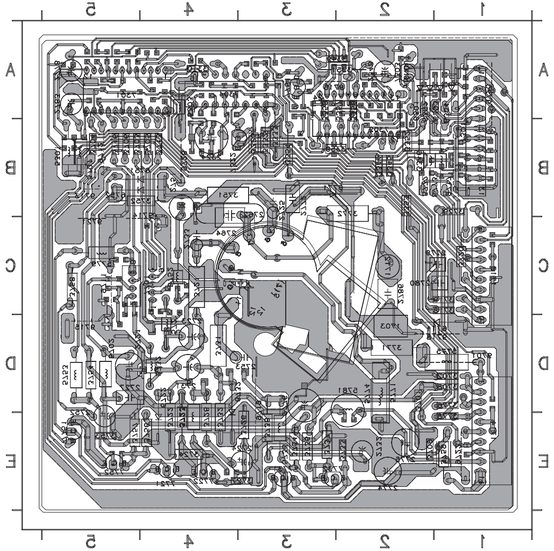
SB: 52941
PB: 52951

OSD DEVIATION TABLE

MODE ITEM	WITH CHINESE OSD	WITH ENGLISH OSD
3328	2372 730 61332 3k3	2372 730 61562 5k6
7304	8238 274 36041 MTV030N-19	8238 274 34421 MTV018-27

NOTES:
@ STANDS FOR CHIP COMPONENT

Video Panel C.B.A.(A)



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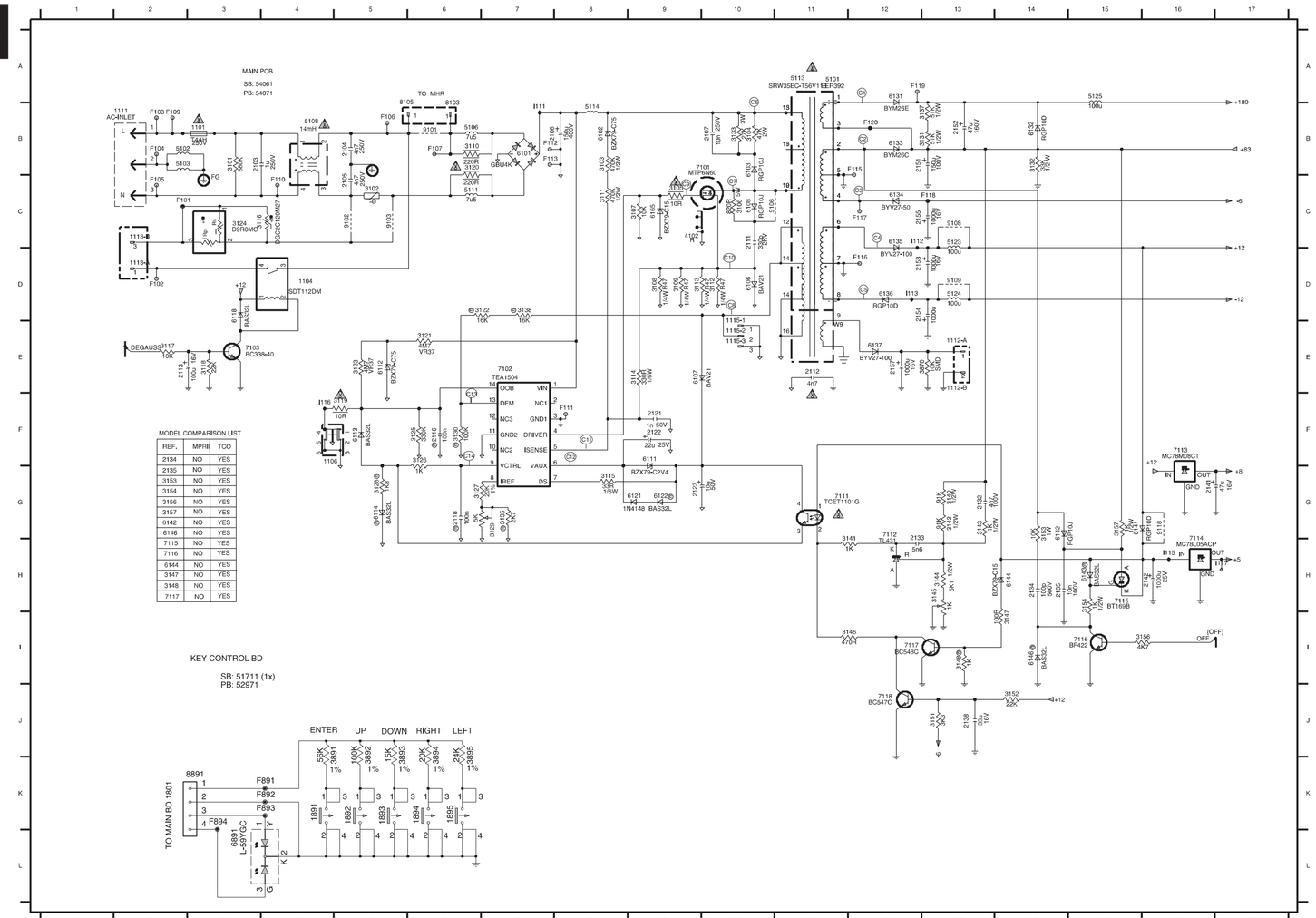
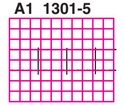
Power Supply Schematic Diagram

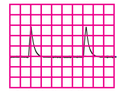
C

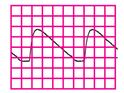


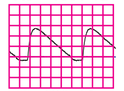
REF.	MPRII	TCO
2134	NO	YES
2135	NO	YES
3153	NO	YES
3154	NO	YES
3156	NO	YES
3157	NO	YES
6142	NO	YES
6146	NO	YES
7115	NO	YES
7116	NO	YES
6144	NO	YES
3147	NO	YES
3148	NO	YES
7117	NO	YES

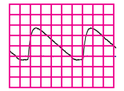
1101 B3
1104 D4
1106 F4
1111 B2
1112-A E13
1112-B E13
1113-A D2
1113-B C2
1115-1 E10
1115-2 E10
1115-3 E10
2103 B3
2104 B5
2105 C5
2106 B7
2107 B10
2111 C10
2112 E11
2113 E2
2116 F6
2118 G6
2121 F9
2122 F9
2123 G9
2132 G13
2133 H12
2134 H14
2135 H14
2138 J13
3141 G16
3142 H16
3151 B12
3152 B13
3153 D12
3154 C12
3156 C12
3157 E12
3161 B3
3102 C5
3103 B6
3104 B10
3105 C9
3106 C10
3107 C9
3108 D9
3109 D9
3110 B6
3111 C8
3112 D10
3113 D9
3114 E9
3115 G8
3116 C4
3117 E2
3118 E3
3119 F5
3120 B6
3121 E4
3122 D7
3123 E5
3124 C3
3125 F6
3126 F6
3127 G6
3129 G5
3129 G7
3130 F6
3131 B13
3132 B14
3133 B10
3135 G7
3137 B13
3138 D7
3140 G13
3141 H12
3142 G13
3143 G13
3144 H13
3145 H13
3146 I12
3147 I14
3148 I13
3151 J13
3152 J14
3153 G14
3154 H15
3156 I16
3157 G15
3161 C13
4102 C9
5101 A11
5103 B2
5103 B2
5106 B6
5108 B4
5111 C6
5113 A11
5114 B8
5123 C13
5124 D13
5125 A15
6101 B7
6102 B8
6103 B10
6106 D10
6107 E9
6108 C10
6111 F9
6112 E5
6113 F5
6114 G5
6118 D3
6121 G9
6122 G9
6131 A12
6132 B14
6133 B12
6134 C12
6135 C12
6136 D12
6137 E12
6141 G15
6142 G14
6143 H15
6144 H14
6146 I14
6165 C9
7101 B10
7102 E7
7103 E3
7111 G11
7112 G12
7113 F16
7114 G16
7115 H15
7116 I15
7117 I12
7118 J12
8103 A6
8105 A6
9101 B6
9102 C6
9103 C6
9106 C10
9108 C13
9109 D1
9118 G1
F101 C2
F102 D2
F103 B2
F104 B2
F105 C2
F106 B5
F107 B6
F109 B2
F110 C4
F111 F6
F112 B7
F113 B7
F115 B1
F116 D1
F117 C1
F118 C1
F119 A1
F120 B1
I111 B1
I112 C1
I113 D1
I115 H1
I116 F4
I117 H1

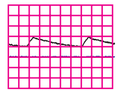
A1 1301-5

0.2 V/div AC
5 mS/div

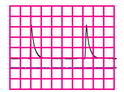
A2 1301-6

0.1 V/div AC
5 uS/div

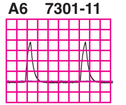
A3 1301-10

20 mV/div AC
5 uS/div

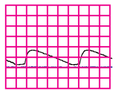
A3 1301-12

20 m V/div AC
5 uS/div

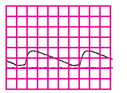
A3 1301-8

20 mV/div AC
5 uS/div

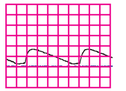
A4 7301-2

10 mV/div AC
5 uS/div

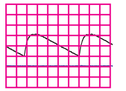
A5 7301-5

50 mV/div AC
5 uS/div

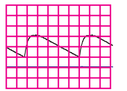
A6 7301-11

0.2 V/div AC
5 uS/div

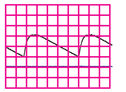
A7 7301-16

0.2 V/div AC
5 uS/div

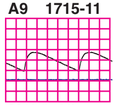
A7 7301-19

0.2 V/div AC
5 uS/div

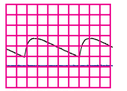
A7 7301-22

0.2 V/div AC
5 uS/div

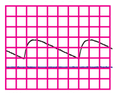
A8 7701-1

20 V/div AC
5 uS/div

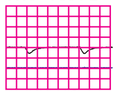
A8 7701-2

20 V/div AC
5 uS/div

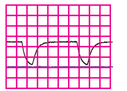
A8 7701-3

20 V/div AC
5 uS/div

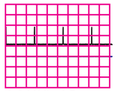
A9 1715-11

20 V/div AC
5 uS/div

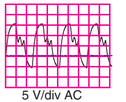
A9 1715-8

20 V/div AC
5 mS/div

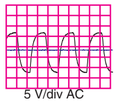
A9 1715-6

20 V/div AC
5 mS/div

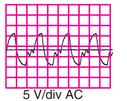
A10 7304-2

0.5 V/div AC
5 uS/div

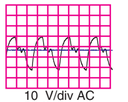
A11 7304-5

2 V/div AC
5 uS/div

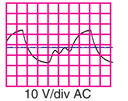
A12 7761-B

0.2 V/div AC
5 mS/div

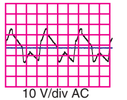
C1 5113-1

5 V/div AC
5 uS/div

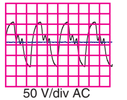
C2 5113-2

5 V/div AC
5 uS/div

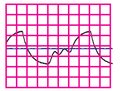
C3 5113-4

5 V/div AC
5 uS/div

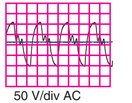
C4 5113-6

10 V/div AC
5 uS/div

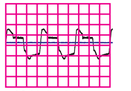
C5 5113-8

10 V/div AC
2 uS/div

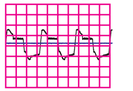
C6 5113-13

10 V/div AC
5 mS/div

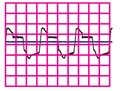
C7 5113-10

50 V/div AC
5 uS/div

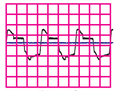
C8 5113-12

10 V/div AC
5 uS/div

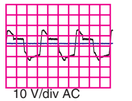
C9 7101-D

50 V/div AC
5 uS/div

C10 7101-S

10 V/div AC
5 mS/div

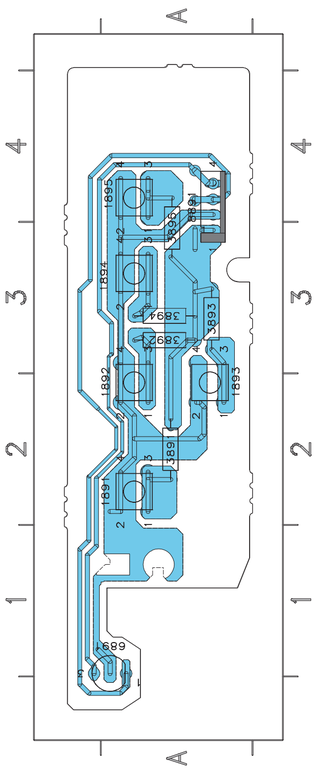
C11 7102-5

10 V/div AC
5 mS/div

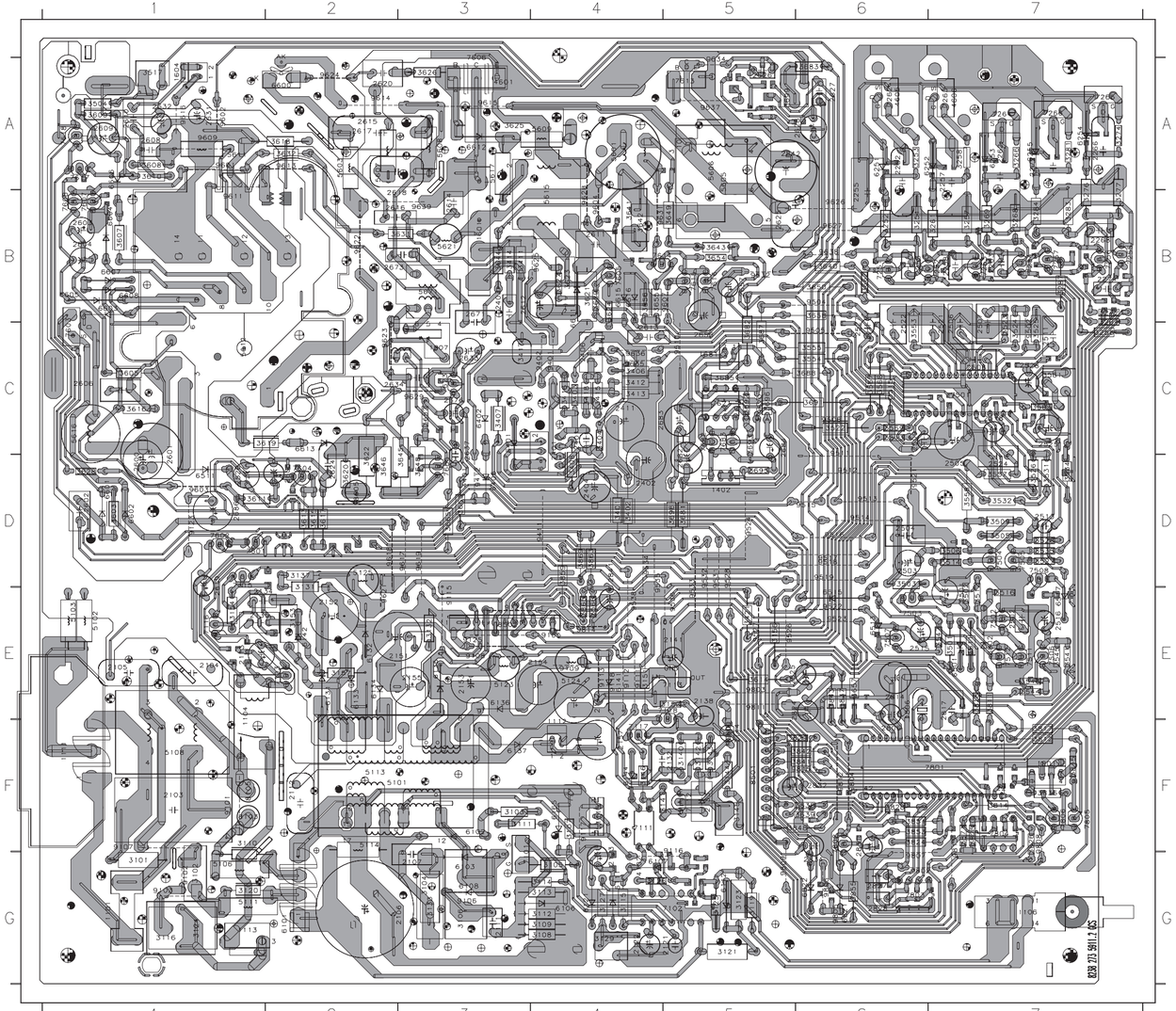
C12 7102-6

10 V/div AC
5 mS/div

C13 7102-14

10 V/div AC
5 mS/div

C14 7102-9

10 V/div AC
5 mS/div

Main Panel (B,C)





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1104	E1	2631	A1	3417	C3	3696	C5	6608	B1	9511	C6	2815	F6
1106	G7	2632	A1	3418	C4	3698	D5	6611	B4	9512	D6	2816	F6
1111	F1	2633	C3	3421	E5	3699	A5	6612	A3	9513	D6	2819	F6
1112	F4	2634	C2	3501	E7	3811	E7	6613	C2	9514	D6	2821	F7
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1115	F4	2656	C5	3503	D6	3814	F7	6616	B4	9516	D6	2823	F7
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1601	B3	2671	B3	3505	D7	3817	F7	6821	G6	9518	D6	3117	E1
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1801	F7	2682	D5	3511	E7	3825	F7	7102	G5	9522	E6	3128	G5
1806	E6	2683	C4	3512	E7	3826	F7	7103	E2	9523	E6	3130	G5
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2105	E1	2814	E6	3516	E7	3837	E6	7114	F5	9528	D5	3148	F5
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2107	G3	2824	E5	3522	C6	3841	F6	7116	E1	9532	D5	3255	B7
2111	G3	2825	E5	3523	C7	3842	F6	7117	F4	9533	E5	3259	A7
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2253	B6	3113	G4	3561	C7	5108	F1	7506	E7	9621	E2	3539	B6
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2272	A7	3124	G1	3607	D2	5603	A2	7604	D2	9629	C3	3606	A1
2274	B7	3125	G5	3608	A1	5605	A5	7605	B4	9631	B4	3612	D2
2401	C4	3126	G4	3609	A1	5606	A5	7606	A3	9632	B5	3633	A1
2402	C4	3127	G4	3610	A1	5607	A2	7607	B1	9634	A5	3634	C7
2403	B3	3129	G4	3611	D1	5608	A3	7608	B1	9635	C4	3635	A5
2404	D4	3131	D2	3613	D2	5609	A4	7613	A5	9636	C4	3636	A6
2406	C4	3132	E3	3614	E5	5611	A1	7614	B4	9637	A5	3637	A5
2411	C4	3133	G3	3615	D2	5612	C1	7615	B5	9638	B6	3638	A5
2501	E7	3137	D2	3616	C1	5615	B4	7616	B5	9639	B3	3653	D3
2502	E7	3140	F5	3617	D2	5616	C1	7617	A1	9802	G6	3659	D3
2503	D6	3141	F4	3618	A2	5617	A3	7618	A1	9803	E5	3664	C3
2504	D6	3142	F5	3619	C2	5621	B3	7621	C5	9804	F6	3694	C5
2505	D7	3143	F5	3620	D2	5671	B3	7623	C3	9805	G6	3813	E7
2506	C7	3144	F5	3621	B4	6101	G2	7682	C5	9806	G6	3816	F7
2507	C7	3145	F5	3622	D2	6102	F3	7683	C5	9807	G6	3819	F7
2508	C7	3146	F4	3623	B4	6103	G3	7685	D3	9808	F7	3821	G6
2509	C6	3151	E4	3624	B4	6106	G4	7801	F7	9809	G5	3822	G6
2511	C7	3152	E5	3625	A3	6107	G4	7802	F6	9811	E5	3823	G6
2513	D7	3153	E2	3626	A3	6108	G3	7803	G6	9812	F6	3827	F7
2515	E6	3154	E1	3627	B4	6111	G4	7804	F7	9813	F7	3831	G6
2516	E7	3156	E5	3628	D1	6112	G5	7805	F7	9814	E4	3832	G6
2518	C7	3157	E2	3629	B4	6121	G4	7806	F7	9815	F6	3833	E6
2521	C7	3251	B6	3631	B3	6131	E2	8103	F1	2116	G5	3834	E6
2522	C6	3252	B6	3632	A2	6132	E2	8105	F1	2118	G4	3835	E6
2524	A6	3253	A6	3639	F6	6133	E2	8501	F5	2251	A6	3844	E6
2525	C7	3256	C7	3640	B6	6134	E2	8502	E3	2254	B7	3845	F6
2526	D1	3257	B7	3641	B4	6135	E3	8605	D2	2256	A7	3846	F6
2527	C6	3258	A7	3642	B4	6136	E3	9101	F1	2259	B7	3847	F6
2528	C7	3261	B7	3643	B5	6137	F3	9102	G1	2260	B6	3852	F6
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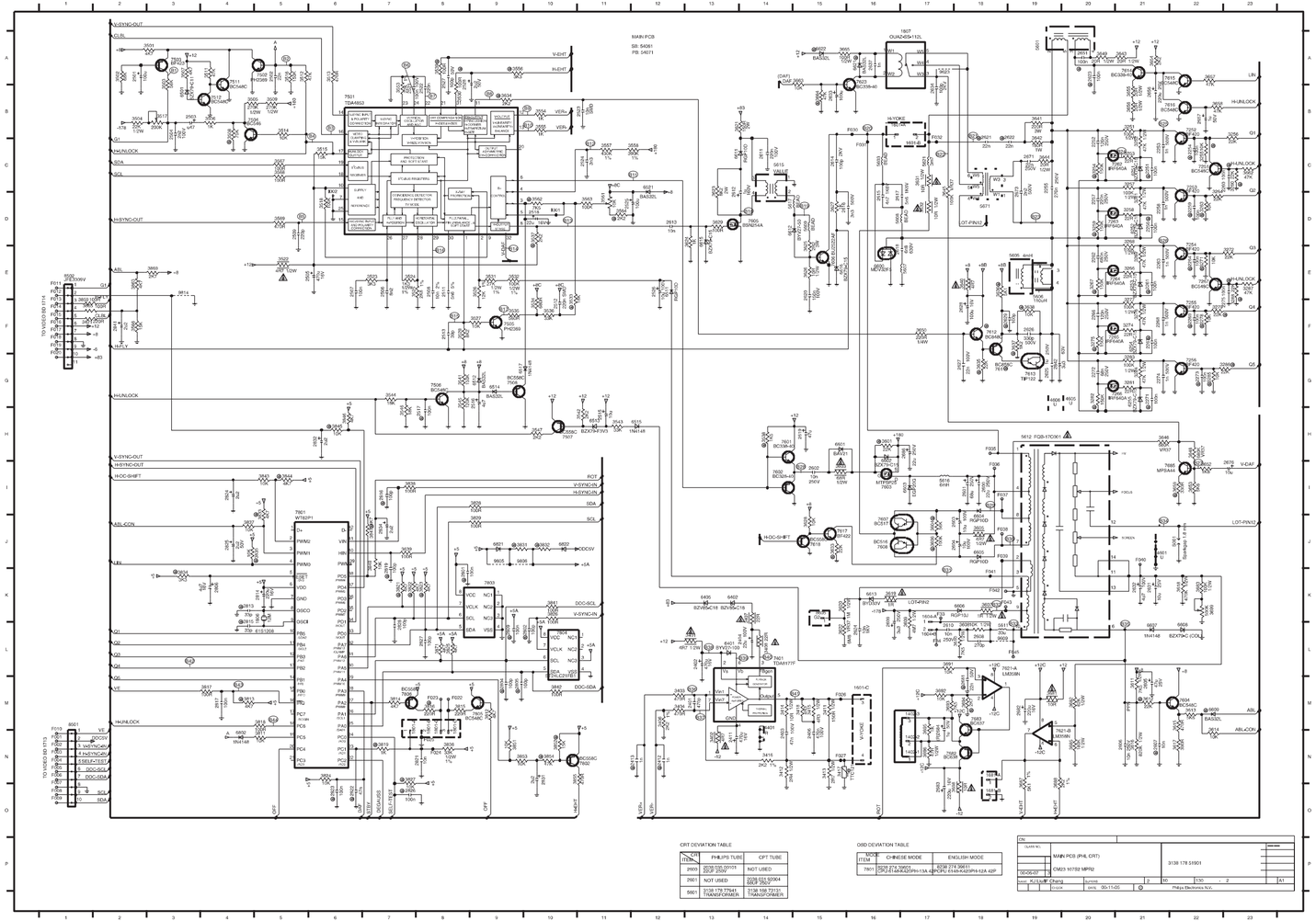
2601	C1	3266	A7	3645	D3	6142	E2	9105	E4	2264	B7	3870	F4
2602	D1	3268	B7	3646	D2	6144	F4	9106	G3	2267	A7	6113	G5
2603	B1	3269	B7	3648	D3	6165	F4	9107	F1	2269	B7	6114	G5
2604	B1	3272	B7	3649	B5	6251	A6	9108	E3	2271	A7	6118	E1
2605	D2	3274	A7	3650	B6	6252	A6	9109	E4	2273	B7	6122	G4
2606	C1	3276	B7	3652	C3	6253	A7	9111	E4	2275	B7	6143	D2
2608	A1	3277	B7	3654	B5	6254	A7	9112	E4	2412	C4	6146	E2
2609	A1	3281	A7	3655	B4	6255	A7	9113	E4	2413	C4	6512	E7
2610	A1	3283	B7	3656	B4	6401	C3	9115	E3	2512	C7	6514	E7
2611	B4	3284	B7	3657	E6	6402	C3	9116	F5	2517	E7	6521	D7
2612	B3	3287	B7	3658	B6	6405	D3	9117	F4	2523	C6	6609	D2
2613	C4	3401	D4	3662	B6	6501	E7	9118	E4	2607	D2	6621	C3
2614	B3	3402	D4	3663	D3	6511	D1	9123	D1	2621	B4	6622	D2
2615	A2	3403	C4	3665	D3	6513	E6	9124	E3	2622	B4	7611	A5
2616	B2	3404	C4	3681	D5	6515	E6	9125	E3	2623	B4	7612	A5
2617	A2	3406	C4	3682	C5	6517	E7	9401	C4	2629	A5		
2618	B2	3407	C3	3683	A6	6600	A2	9402	C4	2651	A5		
2619	D1	3408	D4	3685	C5	6601	D1	9411	D4	2681	C5		
2620	A2	3411	B3	3687	C5	6602	D1	9412	D3	2801	G7		
2624	D2	3412	C4	3688	C6	6603	B1	9502	C7	2802	F7		
2625	B5	3413	C4	3691	C6	6604	B1	9504	B6	2804	F7		
2626	A5	3414	B3	3692	C5	6605	B1	9505	C6	2805	F7		
2627	A6	3415	C4	3693	C5	6606	A1	9508	C6	2809	F7		

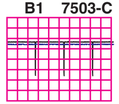
Deflection Schematic Diagram

B



Back
Forward

Waveform (B)

B1 7503-C

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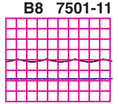
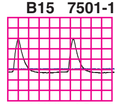
5 mS/div

B8 7501-11

1 V/div AC
5 mS/div

B15 7501-1

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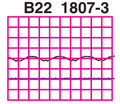
5 uS/div

B22 1807-3

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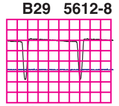
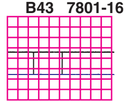
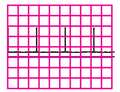
10 uS/div

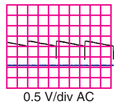
B29 5612-8

10 V/div AC
5 uS/div

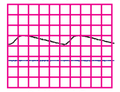
B36 7401-1

0.5 V/div AC
5 mS/div

B43 7801-16

2 V/div AC
5 mS/div

B2 7502-B

0.2 V/div AC
5 mS/div

B9 7501-12

0.5 V/div AC
5 mS/div

B16 7501-29

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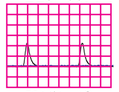
5 uS/div

B23 5671-1

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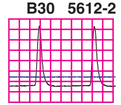
10 uS/div

B30 5612-2

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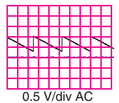
5 uS/div

B37 7401-7

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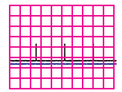
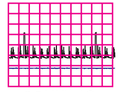
5 mS/div

B44 7801-18

0.5 V/div AC
5 mS/div

B3 7501-16

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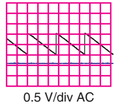
2 mS/div

B10 7501-13

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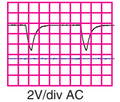
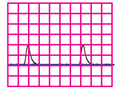
5 mS/div

B17 7505-C

2V/div AC
5 uS/div

B24 7262-G

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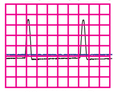
5 uS/div

B31 5612-3

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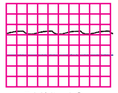
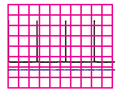
5 uS/div

B38 7401-2

5 V/div AC
5 mS/div

B4 7501-17

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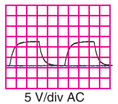
5 mS/div

B11 7501-6

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5 uS/div

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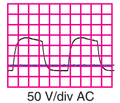
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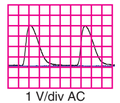
5 uS/div

B25 7252-C

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5 uS/div

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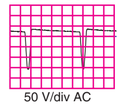
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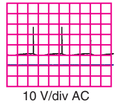
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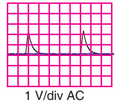
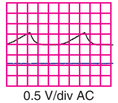
5 mS/div

B5 7501-15

1 V/div AC
5 uS/div

B12 7501-4

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5 uS/div

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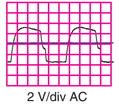
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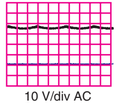
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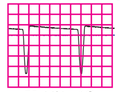
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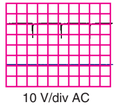
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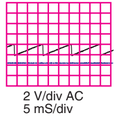
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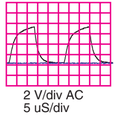
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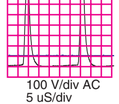
B20 7606-C

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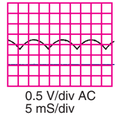
5 uS/div

B27 7685-B

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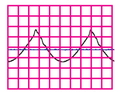
B34 5612-12

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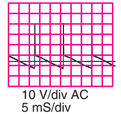
5 uS/div

B41 7401-5

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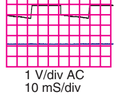
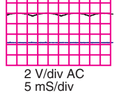
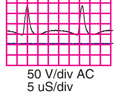
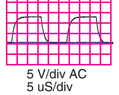
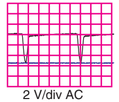
5 mS/div

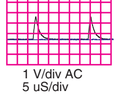
B7 7501-22

1 V/div AC
10 mS/div

B14 7501-32

2 V/div AC
5 mS/div

B21 1601-2

50 V/div AC
5 uS/div

B28 7601-E

5 V/div AC
5 uS/div

B35 5612-6

2 V/div AC
5 uS/div

B42 7801-13

1 V/div AC
5 uS/div

0. Warning

All ICs and many other semi-conductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically. When repairing, make sure that you are connected with the same potential as the mass of the unit via a wrist wrap with resistance. Keep components and tools also at the same potential !

1. Servicing of SMDs (Surface Mounted Devices)

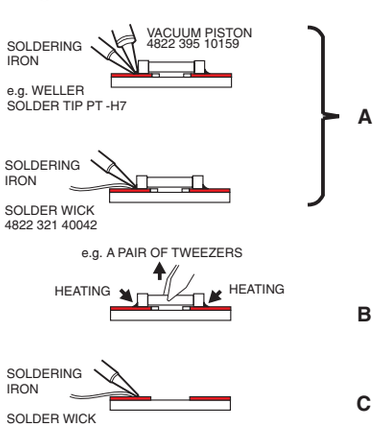
1.1 General cautions on handling and storage

- Oxidation on the terminals of SMDs results in poor soldering. Do not handle SMDs with bare hands.
- Avoid using storage places that are sensitive to oxidation such as places with sulphur or chlorine gas, direct sunlight, high temperatures or a high degree of humidity. The capacitance or resistance value of the SMDs may be affected by this.
- Rough handling of circuit boards containing SMDs may cause damage to the components as well as the circuit boards. Circuit boards containing SMDs should never be bent or flexed. Different circuit board materials expand and contract at different rates when heated or cooled and the components and/or solder connections may be damaged due to the stress. Never rub or scrape chip components as this may cause the value of the component to change. Similarly, do not slide the circuit board across any surface.

1.2 Removal of SMDs

- Heat the solder (for 2-3 seconds) at each terminal of the chip. By means of litz wire and a slight horizontal force, small components can be removed with the soldering iron. They can also be removed with a solder sucker (see Fig. 1A)

Fig. 1 DISMOUNTING



- While holding the SMD with a pair of tweezers, take it off gently using the soldering iron's heat applied to each terminal (see Fig. 1 B).
- Remove the excess solder on the solder lands by means of litz wire or a solder sucker (see Fig. 1C).

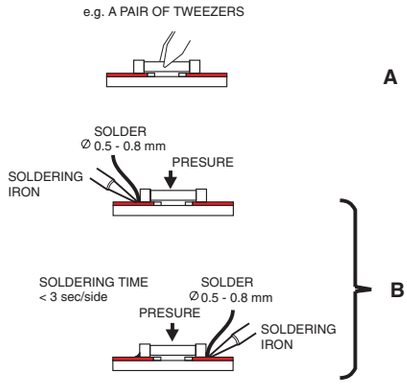
1.3 Caution on removal

- When handling the soldering.iron. use suitable pressure and be careful.
- When removing the chip, do not use undue force with the pair of tweezers.
- The soldering iron to be used (approx. 30 W) should preferably be equipped with a thermal control (soldering temperature: 225 to 250 °C).
- The chip, once removed, must never be reused.

1.4 Attachment of SMDs

- Locate the SMD on the solder lands by means of tweezers and solder the component on one side. Ensure that the component is positioned correctly on the solder lands (see Fig.2A).
- Next complete the soldering of the terminals of the component (see Fiq. 2B).

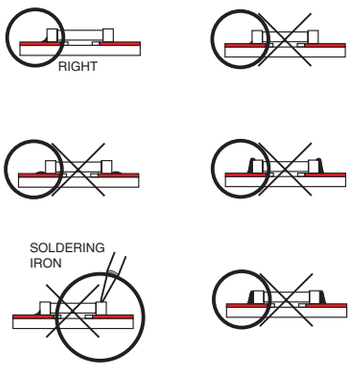
Fig. 2 MOUNTING



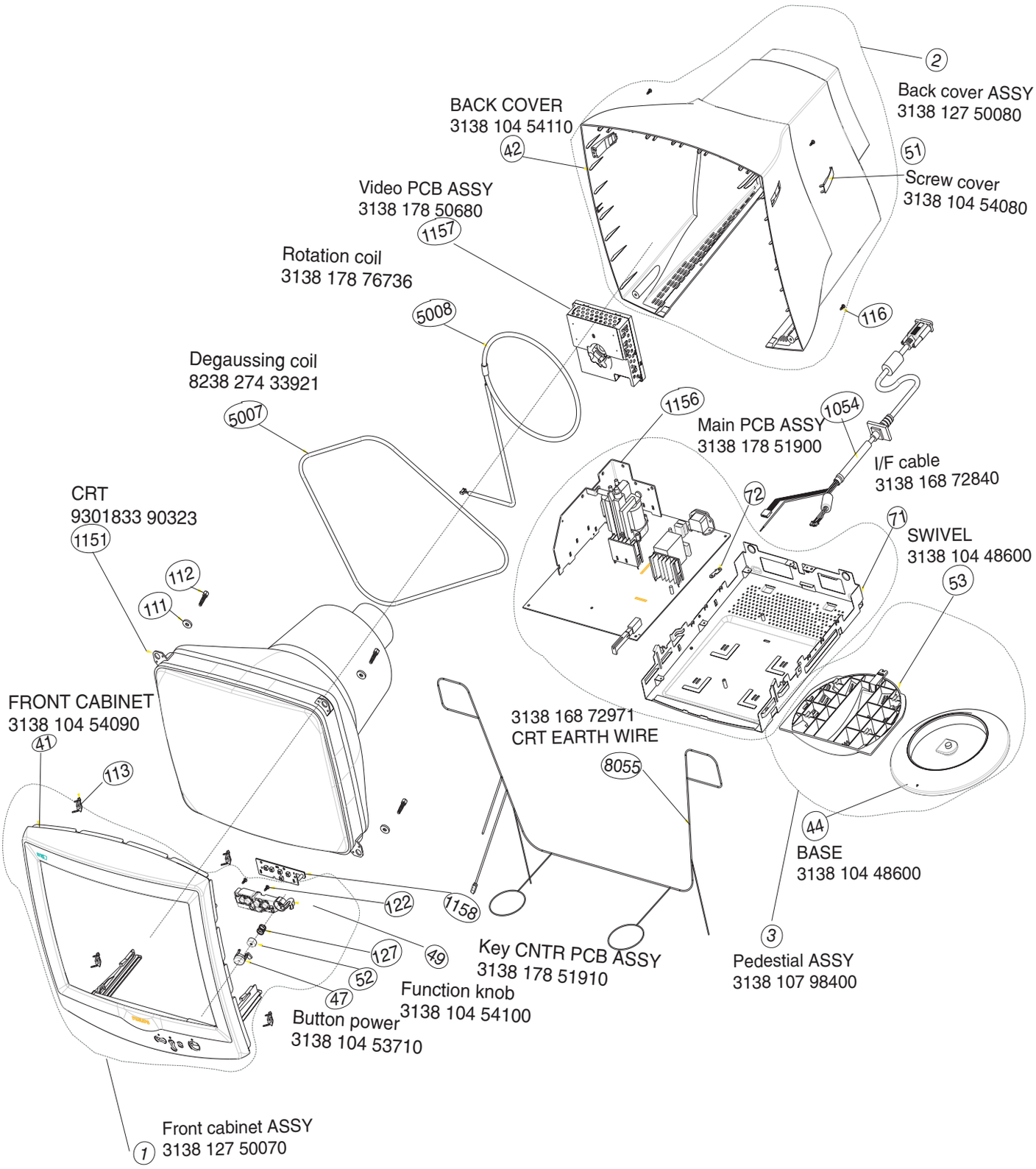
2. Caution when attaching SMDs

- When soldering the SMD terminals, do not touch them directly with the soldering iron. The soldering should be done as quickly as possible, care must be taken to avoid damage to the terminals of the SMDs themselves.
- Keep the SMD's body in contact with the printed board when soldering.
- The soldering iron to be used (approx. 30 W) should preferably be equipped with a thermal control (soldering temperature: 225 to 250 °C).
- Soldering should not be done outside the solder land.
- Soldering flux (of rosin) may be used, but should not be acidic.
- After soldering, let the SMD cool down gradually at room temperature.
- The quantity of solder must be proportional to the size of the solder land. If the quantity is too great, the SMD might crack or the solder lands might be torn loose from the printed board (see Fig. 3).

Fig. 3 Examples



Exploded View



Recommended Parts List

Model :107S21/97C CM23 GS3

Parts indicated on exploded view

1	3138 127 50070	FRONT CABINET ASSY
41	3138 104 54090	FRONT CABINET
49	3138 104 54100	BUTTON-FUNCTION
47	3138 104 53710	BUTTON POWER
2	3138 127 50080	BACK COVER ASSY
42	3138 104 54110	BACK COVER
3	3138 107 98400	PEDESTAL ASSY
44	3138 104 48610	BASE-PEDESTAL
53	3138 104 48600	SWIVEL-PEDESTAL
1151	9301 833 90323	CRT 17" M41EHN323X160/G341BA
1156	3138 178 51901	107S2(71K)-P MAIN PCB ASSY
1157	3138 178 50681	107S2(71K)-P VIDEO PCB ASSY
1158	3138 178 51911	107S2(71K)-P KEY CNTR PCB ASSY
601	3138 117 02630	E-DFU assy -V/E (CD-ROM+ Quick Start Guide)
602	3138 117 02640	E-DFU (CD-ROM Disc)-V/E
178	3138 105 40011	Quick start guide (Western Europe Languages)
450	3138 106 58361	CARTON
451	3138 106 56352	CUSHION-TOP-L
452	3138 106 56342	CUSHION-TOP-R
454	3138 106 56581	PE BAG
1053	2438 070 98118	MAINS CORD (125V)
1054	3138 168 72841	I/F CABLE
1101	2422 086 00208	FUSE T4AH/ 250V
5113	3138 168 72851	POWER TRANSFORMER
5601	3138 178 77941	LINEARITY COIL
5612	3138 168 73091	L.O.T(LCE)
7101	9322 135 00687	MOS TRANSTER SSP7N60A
7102	9352 645 03112	TEA1504AP/N2 14P
7112	9337 711 00686	IC TL431
7113	9335 282 90682	IC L7808CT
7114	9335 107 20682	IC L7805CV
7501	9352 637 56112	IC TDA4841PS-V2 32P
7606	9340 299 10127	TRANSTER BU2522AF
7613	9311 010 33687	TRA MOW TIP122
7685	9340 258 70126	TRA SIG MPSA44
7701	9322 145 97667	LM2439T 9P
7801	8238 274 39611	CPU 6148-K420PH-12A 42P
7803	9322 126 62682	IC M24C16-BN6 8P

Model :107S21/97C

1	3138	127	50071	FRONT CABINET ASSY
2	3138	101	65591	CLIP-R
2	3138	127	50081	BACK COVER ASSY
3	3138	101	65601	CLIP-L
3	3138	107	98401	PEDESTAL ASSY
41	3138	104	54091	FRONT CABINET
42	3138	104	54111	BACK COVER
44	3138	104	48612	BASE
47	3138	104	53711	BUTTON-POWER
49	3138	104	54101	BUTTON-FUNCTION
51	3138	104	54081	SCREW COVER
52	3138	104	50672	LENS-POWER
53	3138	104	48602	SWIVEL
60	3138	104	49481	FOOT RUBBER
153	3138	106	58051	P.E. BAG-E-D.F.U.
178	3138	105	40011	SETTING UP GUIDE
450	3138	106	58361	CARTON
451	3138	106	56352	CUSHION - LEFT
452	3138	106	56342	CUSHION - RIGHT
454	3138	106	56581	PE BAG
601	3138	117	02631	E-D.F.U. ASSY-V/E
602	3138	117	02641	E-D.F.U.-V/E
1050	3138	178	50661	107S2(71K)-P SEMIFINISHED SET
1053	3138	118	75011	MAINS CORD (120V)
1054	3138	168	72841	I/F CABLE
1101▲	2422	086	00208	FUSE T4AH 250V
1104	2422	132	07402	RELAY SDT -SS-112DM
1106	2438	128	00183	SWITCH
1111	3138	178	76762	AC INLET ASSY
1113	2438	025	00208	WAFER 2P
1151	9301	833	90323	CRT 17" M41EHN 323X160/G341BA
1152	3138	188	05111	107S2(71K)-P ALL CHA.KITS
1153	3322	144	89801	SPOILER
1156	3138	178	51901	107S2(71K)-P MAIN PCB ASSY
1157	3138	178	50681	107S2(71K)-P VIDEO PCB ASSY
1158	3138	178	51911	107S2(71K)-KEY CNTR PCB ASSY
1252	3138	178	52071	H-O/P TRANS ASSY -107E2
1253	3138	178	52081	POWER TRANS ASSY -107E2 (7101)
1255	3138	178	04951	VERT IC ASSY -COCA+ (7401)
1258	3138	178	50701	EEPROM ASSY -107S2 (7803)
1301	2438	031	00072	CON BM V 12P M 2.5 625/635 B
1302	3138	178	07351	VIDEO IC ASSY -GS3 (LM2439)
1402	2438	031	00116	CON BM V 03P M 2.50
1601	3138	100	20993	CONNECTOR 4P 2.35 DIA J101
1604	2438	031	00061	CON BM V 2P M 2.5 625/635 B
1681	2438	031	00097	CON BM V 2P M 2.5
1703	2438	025	00085	1P CONN. 2.35 DIA - J10
1712	3138	178	77651	1P WAFER 2.0 DIA
1715	2422	500	80041	CON BM CRT V 10P F DAF B
1800	2438	031	00167	CON BM IC V 42P F 1.778 DIL B
1801	2438	031	00063	CON BM V 4P M 2.5 625/635 B
1806	2438	543	00061	RES XTL 12MHZ 30P HC49U B
1891	2438	128	00196	SWI TACT H EQU. TO 5 GY 160G SKHHAM B
1892	2438	128	00196	SWI TACT H EQU. TO 5 GY 160G SKHHAM B
1893	2438	128	00196	SWI TACT H EQU. TO 5 GY 160G SKHHAM B
1894	2438	128	00196	SWI TACT H EQU. TO 5 GY 160G SKHHAM B
1895	2438	128	00196	SWI TACT H EQU. TO 5 GY 160G SKHHAM B

2103	2020	307	90006	ACROSS LINE CAP 250V 1UF PM20
2104	2020	554	90139	CERSAF NSB 250V S 4N7 PM20 B
2105	2020	554	90139	CERSAF NSB 250V S 4N7 PM20 B
2106	2038	035	00221	ELCAP LZK 150U 400V 25X30 PM20
2107	2038	302	50229	CAP MPOL 250V S 10N PM5 A
2111	2252	602	14316	CER2 DC X7R 2KV S 330P PM10 A
2112▲	2020	554	90138	CERSAF NSA 250V S 4N7 PM20 B
2113	2038	034	53101	ELCAP S 16V 100UF PM20 2E
2116	2238	910	16649	MLCC 0805 X7R 25V 100N K R
2118	2238	910	16649	MLCC 0805 X7R 25V 100N K R
2121	2020	552	90807	CERC DC 50V 1N0 PM10
2122	2038	034	54229	ELCAP S 25V 22UF PM20 2E T
2123	2038	034	56109	ELCAP S 50V 10UF PM20 2E
2132	2038	301	50111	PPN CAP 4N7 250V PM5 2E
2133	2038	301	50143	PPN 100V 5N6 PM5 2E
2134	2038	554	00003	CER2 DC Y5P 500V S 100P PM10 A
2135	2038	302	50218	MEF CAP 10N 100V PM2 2E
2138	2038	035	50308	NP CAP 16V 33UF PM20 2E T
2141	2038	034	54479	ELCAP S 25V 47UF PM20 2E T
2142	2038	035	00083	ELCAP SK 25V S 1000U PM20 B
2151	2038	035	00032	ELCAP 150UF 100V PM20 2E B
2152	2038	031	92479	ELCAP 160V 47UF PM20 105DEG C
2153	2038	031	35102	ELCAP S 16V 1000UF PM20 2E T
2154	2038	031	35102	ELCAP S 16V 1000UF PM20 2E T
2155	2038	031	35102	ELCAP S 16V 1000UF PM20 2E T
2251	2238	910	16649	MLCC 0805 X7R 25V 100N K R
2252	2038	301	00307	MPS CAP 120N 250V PM5 7E
2253	2020	557	90151	CERC DC 500V 1N0 PM10
2254	2238	910	16649	MLCC 0805 X7R 25V 100N K R
2255	2038	301	00225	MPS CAP 270N 250V PM5
2256	2238	910	16649	MLCC 0805 X7R 25V 100N K R
2257	2038	301	00224	MPS CAP 220N 250V PM5 7E
2258	2020	557	90151	CERC DC 500V 1N0 PM10
2259	2238	910	16649	MLCC 0805 X7R 25V 100N K R
2260	2238	910	16649	MLCC 0805 X7R 25V 100N K R
2261	2238	910	16649	MLCC 0805 X7R 25V 100N K R
2262	2038	301	00228	MPS CAP 680N 250V PM5
2263	2020	557	90151	CERC DC 500V 1N0 PM10
2264	2238	910	16649	MLCC 0805 X7R 25V 100N K R
2275	2238	910	16649	MLCC 0805 X7R 25V 100N K R
2301	2238	910	16649	MLCC 0805 X7R 25V 100N K R
2302	2238	910	16649	MLCC 0805 X7R 25V 100N K R
2304	2238	861	15221	MLCC 0850 NPO 220PF J 4B 9
2305	2238	861	15221	MLCC 0850 NPO 220PF J 4B 9
2306	2238	861	15221	MLCC 0850 NPO 220PF J 4B 9
2307	2238	910	16649	MLCC 0805 X7R 25V 100N K R
2308	2238	910	16649	MLCC 0805 X7R 25V 100N K R
2309	2238	910	16649	MLCC 0805 X7R 25V 100N K R
2310	2238	910	16649	MLCC 0805 X7R 25V 100N K R
2311	2238	910	16649	MLCC 0805 X7R 25V 100N K R
2312	2238	910	16649	MLCC 0805 X7R 25V 100N K R
2316	2238	861	15478	SMD 0805 NPO 4P7 50V 0.25P
2317	2238	861	15478	SMD 0805 NPO 4P7 50V 0.25P
2318	2238	861	15478	SMD 0805 NPO 4P7 50V 0.25P
2319	2222	861	12109	SMD0805NPO 10P 50V +/-5%
2322	2222	910	16647	CER2 0805 X7R 25V 68N PM10
2323	2238	580	16627	CER2 0805 X7R 50V 10N PM10 R
2324	2038	034	53221	ELCAP S 16V 220UF PM20 2E
2325	2238	910	16649	MLCC 0805 X7R 25V 100N K R
2326	2238	910	16649	MLCC 0805 X7R 25V 100N K R
2340	2238	910	16649	MLCC 0805 X7R 25V 100N K R
2341	2238	910	16649	MLCC 0805 X7R 25V 100N K R
2342	2238	910	16649	MLCC 0805 X7R 25V 100N K R
2343	2238	910	16649	MLCC 0805 X7R 25V 100N K R
2344	2238	910	16649	MLCC 0805 X7R 25V 100N K R
2345	2238	910	16649	MLCC 0805 X7R 25V 100N K R
2346	2238	910	16649	MLCC 0805 X7R 25V 100N K R
2347	2238	910	16649	MLCC 0805 X7R 25V 100N K R
2348	2038	034	56109	ELCAP S 50V 10UF PM20 2E
2349	2238	910	16649	MLCC 0805 X7R 25V 100N K R
2401	2020	552	90803	CERC DC 50V 470P PM10 2E
2402	2038	034	53471	ELCAP VX 470UF M 16V 2E 10x12.5 T
2403	2038	302	50094	MEF CAP 100V 47N PM10 2E
2404	2038	034	58229	ELCAP S 100V 22UF PM20 2E T
2406	2038	302	50099	POLCAP 100V 470N PM10 2E
2411	2038	034	53471	ELCAP VX 470UF M 16V 2E 10x12.5 T
2412	2238	580	16614	CER2 0805 X7R 50V 1N PM10
2413	2238	580	16614	CER2 0805 X7R 50V 1N PM10
2501	2038	034	54101	ELCAP S 25V 100UF PM20 2E
2505	2038	034	53471	ELCAP VX 470UF M 16V 2E 10x12.5 T
2506	2038	301	50186	PPN 100V 8N2 PM5 T
2507	2038	302	50095	MEF CAP 100V 100N PM10 2E
2508	2038	302	50218	MEF CAP 10N 100V PM2 2E
2509	2020	552	90798	CERC DC 50V 220P PM10
2511	2038	301	50157	CAP PP PPN 100V S 5N6 PM2 A
2512	2222	590	18814	MLCC 0805 Y5V 220N 4B 9
2513	2020	552	90597	CERC DC NPO 50V 39P PM5 2E T
2516	2038	034	56478	ELCAP S 50V 4UF7 PM20 2E
2517	2238	910	16649	MLCC 0805 X7R 25V 100N K R
2518	2038	034	53229	ELCAP S 16V 22UF PM20 2E
2521	2038	302	50095	MEF CAP 100V 100N PM10 2E
2522	2038	302	50125	MEF CAP 100V 220N PM10 2E
2523	2238	580	16627	CER2 0805 X7R 50V 10N PM10 R
2524	2038	301	50136	PPN CAP 100V 3N3 PM5
2525	2038	034	54101	ELCAP S 25V 100UF PM20 2E
2526	2038	034	58109	ELCAP S 100V 10UF PM20 2E T
2527	2020	552	90603	CERC DC NPO 50V 100P PM5 2E T
2528	2038	034	56228	ELCAP S 50V 2UF2 PM20 2E T
2600	2038	035	00101	ELCAP 250V 22U PM20 2E VT
2601	2038	031	92004	ELCAP S 250V 68UF PM20 3E
2602	2038	302	50229	CAP MPOL 250V S 10N PM5 A
2603	2038	034	58109	ELCAP S 100V 10UF PM20 2E T
2604	2038	034	58109	ELCAP S 100V 10UF PM20 2E T
2605	2038	034	54479	ELCAP S 25V 47UF PM20 2E T
2606	2038	301	50301	PPN CAP 250V 10N PM5 2E
2607	2238	580	16627	CER2 0805 X7R 50V 10N PM10 R
2608	2020	552	90799	CERC DC 50V 270P PM10 T
2609	2038	035	50209	ELCAP SH 250V S 3U3 PM20 A
2610	2038	302	50229	CAP MPOL 250V S 10N PM5 A
2611	2038	302	50125	MEF CAP 100V 220N PM10 2E
2612	2038	031	95005	ELCAP S 160V 1UF PM20 2E T
2613	2020	552	90821	CERC DC 50V 10N PM10 T
2614	2252	712	14016	LOW LOSS 0.2% Y5R 2KV 100P K 2E T
2615	2038	301	00119	PPS CAP 1K6V 4N7 PM5
2616	2020	557	90155	CER2 DC B 500V S 3N3 PM10 A
2618	2038	301	00193	PPN CAP 630V 6N8 PM5
2619	2038	034	53479	ECAP S 16V 47UF M 2E T
2620	2038	302	50121	MEF CAP 100V 150N 2E PM10
2621	2238	580	16632	CER2 0805 X7R 22N 50V PM10
2622	2238	580	16632	CER2 0805 X7R 22N 50V PM10
2623	2238	910	16649	MLCC 0805 X7R 25V 100N K R
2624	2252	641	16037	CER CAP Z5U 1KV 10N PM10 B
2626	2020	557	90122	CERC 500V 330P PM2 2E T
2627	2020	552	90834	CCAP DC 50V 22N Z A
2628	2038	034	53101	ELCAP S 16V 100UF PM20 2E
2631	8238	274	36521	ELCAP SB 25V 10UF PM20 2E T
2634	2252	712	14016	LOW LOSS 0.2% Y5R 2KV 100P K 2E T
2651	2238	910	16649	MLCC 0805 X7R 25V 100N K R
2656	2038	034	54221	ELCAP S 25V 220UF PM20 2E T
2657	2038	034	56108	ELCAP S 50V 1UF PM20 2E T
2671	2038	302	50142	MEF CAP 22N 250V PM10 2E
2673	2020	557	90153	CERC DC 500V 2N2 PM10
2676	2038	034	56109	ELCAP S 50V 10UF PM20 2E
2681	2238	580	16632	CER2 0805 X7R 22N 50V PM10
2682	2038	034	53221	ELCAP S 16V 220UF PM20 2E
2683	2038	034	53221	ELCAP S 16V 220UF PM20 2E
2686	2038	035	00101	ELCAP 250V 22U PM20 2E VT
2702	2238	910	16649	MLCC 0805 X7R 25V 100N K R
2721	2038	031	85109	ELCAP S 100V 10UF PM20 2E T
2722	2222	590	16641	MLCC 0805 X7R 100N K 50V PM10

2723	2038	035	22801	ECAP NP 1U 160V 105C NK
2724	2038	034	58108	ELCAP S 100V 1U PM20 2E T
2725	2422	549	44346	SPARK GAP DSP-201m
2726	2222	590	16641	MLCC 0805 X7R 100N K 50V PM10
2727	2020	557	90151	CERC DC 500V 1N0 PM10
2731	2038	035	22801	ECAP NP 1U 160V 105C NK
2732	2038	034	58108	ELCAP S 100V 1U PM20 2E T
2733	2422	549	44346	SPARK GAP DSP-201m
2751	2038	035	22801	ECAP NP 1U 160V 105C NK
2752	2038	034	58108	ELCAP S 100V 1U PM20 2E T
2753	2422	549	44346	SPARK GAP DSP-201m
2760	2238	861	15471	CMC 0805 NPO 470P 50V J
2761	2238	910	16649	MLCC 0805 X7R 25V 100N K R
2762	2235	559	00099	CERC CAP 2KV 10N PM10 4E
2763	2238	580	16623	MLCC 0805 X7R 4N7F K 4B 9
2771	2222	590	16641	MLCC 0805 X7R 100N K 50V PM10
2772	2020	557	90149	CERC DC 500V 820P PM10
2774	2038	031	45101	ECAP S 25V 100UF M 2E T
2775	2038	031	85109	ELCAP S 100V 10UF PM20 2E T
2776	2038	031	85229	ELCAP S 100V 22UF PM20 2E T
2778	2038	031	45479	ELCAP VT 25V 47UF PM20 2E T
2779	2020	552	90598	CERC DC NPO 50V 47P PM5 2
2780	2020	552	90598	CERC DC NPO 50V 47P PM5 2
2781	2222	861	12479	MLCC 0805 NPO 50V 47P COL R
2782	2222	861	12479	MLCC 0805 NPO 50V 47P COL R
2783	2038	031	45479	ELCAP VT 25V 47UF PM20 2E T
2801	2238	910	16649	MLCC 0805 X7R 25V 100N K R
2802	2222	861	12101	CER1 0805 NPO 50V 100P PM5
2804	2222	861	12101	CER1 0805 NPO 50V 100P PM5
2805	2222	861	12101	CER1 0805 NPO 50V 100P PM5
2806	2038	034	54478	ELCAP S 25V 4UF7 PM20 2E T
2809	2238	910	16649	MLCC 0805 X7R 25V 100N K R
2813	2238	861	15339	CAP 33PF 0805 SMD NPO
2814	2038	034	53221	ELCAP S 16V 220UF PM20 2E
2815	2238	861	15339	CAP 33PF 0805 SMD NPO
2816	2222	861	12101	CER1 0805 NPO 50V 100P PM5
2817	2038	302	50212	POLCAP 100V 100N PM5 2E T
2819	2222	861	12101	CER1 0805 NPO 50V 100P PM5
2821	2238	580	16627	CER2 0805 X7R 50V 10N PM10 R
2822	2238	910	16645	CAP 47NF SMD 0805 X7R
2823	2238	910	16649	MLCC 0805 X7R 25V 100N K R
2824	2038	034	56228	ELCAP S 50V 2UF2 PM20 2E T
2825	2038	034	56228	ELCAP S 50V 2UF2 PM20 2E T
2826	2238	910	16649	MLCC 0805 X7R 25V 100N K R
2827	2020	552	90603	CERC DC NPO 50V 100P PM5 2E T
2828	2020	552	90603	CERC DC NPO 50V 100P PM5 2E T
2831	2038	034	56228	ELCAP S 50V 2UF2 PM20 2E T
2832	2038	034	56228	ELCAP S 50V 2UF2 PM20 2E T
2834	2038	034	56228	ELCAP S 50V 2UF2 PM20 2E T
2841	2038	034	56228	ELCAP S 50V 2UF2 PM20 2E T
2842	2038	033	00008	ELCAP BP 63V S 3U3 PM20 B

3101	2322	242	13684	METGLAZ RST A VR37 680K PM5
3102	2138	660	00027	NTC DC SCK-104 S 10R PM15
3103	2138	116	14704	RST MFLM MF50S A 470K PM1 A
3104	3138	100	50511	MET FLM RST RSS2J 47K 6E
3105▲	2322	207	33109	RST MFLM NFR25H S 10R PM5
3107	2138	101	13103	RST CRB CR12 A 10K PM5 A
3108	2138	112	73477	CARBRST R25 0.47R PM5
3109	2138	112	73477	CARBRST R25 0.47R PM5
3110▲	2322	207	33221	RST NFR25H 220R PM5
3111	2138	116	14704	RST MFLM MF50S A 470K PM1 A
3112	2138	112	73477	CARBRST R25 0.47R PM5
3113	2138	112	73477	CARBRST R25 0.47R PM5
3114	2138	101	13331	RST CRB CR12 A 330R PM5 A
3115	2138	112	73339	CARBRST FLM CR25 33R PM5 T
3117	2322	730	61103	RES 10K RC-11 SMD 0805 T
3118	2322	730	61223	RES 22K 0805 SMD
3119▲	2322	207	33109	RST MFLM NFR25H S 10R PM5
3120▲	2322	207	33221	RST NFR25H 220R PM5
3121	2322	242	13475	METGLAZ RST A VR37 4M7 PM5 T
3122	2322	730	61163	RES 16K SMD 0805
3123	2322	242	13475	METGLAZ RST A VR37 4M7 PM5 T
3124	2138	660	00036	PTC 9 OHM
3125	2138	101	13334	RST CRB CR12 A 330K PM5 A
3126	2138	101	13102	RST CRB CR12 A 1K PM5 A
3127	2138	116	12003	RST MFLM MF50S A 20K PM1 A
3128	2322	730	61182	RES 1K8 0805 SMD
3129	2138	365	00091	RTRM CER LIN 5KH VG067TL15KB
3131	2138	116	15103	RST MFLM MF50S A 51K PM1 A
3132	2138	116	13303	RST MFLM MF50S A 33K PM1 A
3137	2138	116	15103	RST MFLM MF50S A 51K PM1 A
3138	2322	730	61163	RES 16K SMD 0805
3140	2138	116	19103	RST MFLM MF50S A 91K PM1 A
3141	2138	101	13102	RST CRB CR12 A 1K PM5 A
3142	2138	116	19103	RST MFLM MF50S A 91K PM1 A
3143	2138	116	11002	RST MFLM MF50S A 1K PM1 A
3144	2138	116	15102	RST MFLM MF50S A 5K1 PM1 A
3145	2138	365	00081	RTRM CER LIN 1K H VG067TL1 B
3146	2138	101	13471	RST CRB CR12 A 470R PM5 A
3147	2322	730	61101	RST SM 0805 RC11 100R PM5 R
3148	2322	730	61102	RST SMC 0805 RC11 1K PM5 T
3151	2138	101	13332	RST CRB CR12 A 3K3 PM5 A
3152	2138	101	13223	RST CRB CR12 A 22K PM5 A
3153	2120	105	92364	MET FLM RST 1W 10K RSS PM5
3154	2138	116	11002	RST MFLM MF50S A 1K PM1 A
3156	2138	101	13472	RST CRB CR12 A 4K7 PM5 A
3157	2138	116	11002	RST MFLM MF50S A 1K PM1 A
3251	2138	116	11004	RST MFLM MF50S A 100K PM1 A
3252	2138	116	14703	RST MFLM MF50S A 47K PM1 A
3253	2138	101	13229	RST CRB CR12 A 22R PM5 A
3254	2322	730	61154	RST SM 0805 RC11 150K PM5 R
3255	2322	730	61103	RES 10K RC-11 SMD 0805 T
3256	2138	101	13223	RST CRB CR12 A 22K PM5 A
3257	2138	116	11004	RST MFLM MF50S A 100K PM1 A
3258	2138	101	13229	RST CRB CR12 A 22R PM5 A
3259	2322	730	61154	RST SM 0805 RC11 150K PM5 R
3260	2322	730	61223	RES 22K 0805 SMD
3261	2138	116	14703	RST MFLM MF50S A 47K PM1 A
3263	2322	730	61103	RES 10K RC-11 SMD 0805 T
3264	2138	101	13223	RST CRB CR12 A 22K PM5 A
3266	2138	101	13229	RST CRB CR12 A 22R PM5 A
3267	2322	730	61154	RST SM 0805 RC11 150K PM5 R
3268	2138	116	11004	RST MFLM MF50S A 100K PM1 A
3269	2138	116	14703	RST MFLM MF50S A 47K PM1 A
3271	2322	730	61103	RES 10K RC-11 SMD 0805 T
3272	2138	101	13223	RST CRB CR12 A 22K PM5 A
3287	2138	101	13473	RST CRB CR12 A 47K PM5 A
3288	2322	730	61223	RES 22K 0805 SMD
3301	2322	730	61759	RST SM 0805 RC11 75R PM5 T
3302	2322	730	61759	RST SM 0805 RC11 75R PM5 T
3303	2322	730	61759	RST SM 0805 RC11 75R PM5 T
3305	2322	730	61472	RST SM 0805 RC11 4K7 PM5 R
3306	2322	730	61472	RST SM 0805 RC11 4K7 PM5 R
3307	2322	730	61101	RST SM 0805 RC11 100R PM5 R
3309	2322	730	61102	RST SMC 0805 RC11 1K PM5 T
3310	2138	101	13102	RST CRB CR12 A 1K PM5 A
3311	2322	730	61102	RST SMC 0805 RC11 1K PM5 T
3312	2322	730	61479	RES 47R 0805 SMD RC-11 T
3313	2322	730	61479	RES 47R 0805 SMD RC-11 T
3314	2322	730	61479	RES 47R 0805 SMD RC-11 T
3315	2322	730	61222	RST SM 0805 RC11 2K2 PM5 R
3316	2322	730	61101	RST SM 0805 RC11 100R PM5 R
3317	2322	730	61221	RES 220R 0805 SMD RC-11 T
3324	2322	730	61332	RES 3K3 0805 SMD
3325	2138	101	13103	RST CRB CR12 A 10K PM5 A
3326	2322	730	61103	RES 10K RC-11 SMD 0805 T
3327	2322	730	61562	RES 5.6K RC-11 SMD 0805 T
3328	2322	730	61562	RES 5.6K RC-11 SMD 0805 T
3329	2322	730	61562	RES 5.6K RC-11 SMD 0805 T
3330	2322	730	61394	SMD R0805 390K PM5
3332	2138	101	13101	RST CRB CR12 A 100R PM5 A
3333	2138	101	13101	RST CRB CR12 A 100R PM5 A
3334	2322	730	61151	RST SM 0805 RC11 150R PM5 R
3335	2322	730	61102	RST SMC 0805 RC11 1K PM5 T
3336	2322	730	61102	RST SMC 0805 RC11 1K PM5 T
3337	2322	730	61102	RST SMC 0805 RC11 1K PM5 T
3338	2322	730	91002	RST SM 0805 JUMP. MAX 0R05 T
3339	2322	730	91002	RST SM 0805 JUMP. MAX 0R05 T
3340	2322	730	91002	RST SM 0805 JUMP. MAX 0R05 T
3341	2322	730	61101	RST SM 0805 RC11 100R PM5 R
3342	2322	730	61101	RST SM 0805 RC11 100R PM5 R
3343	2322	730	61101	RST SM 0805 RC11 100R PM5 R
3344	2138	101	13101	RST CRB CR12 A 100R PM5 A
3345	2138	101	13101	RST CRB CR12 A 100R PM5 A
3346	2138	101	13101	RST CRB CR12 A 100R PM5 A
3347	2322	730	61101	RST SM 0805 RC11 100R PM5 R
3348	2322	730	61101	RST SM 0805 RC11 100R PM5 R
3349	2138	101	13101	RST CRB CR12 A 100R PM5 A
3350	2322	730	61101	RST SM 0805 RC11 100R PM5 R
3351	2138	101	13101	RST CRB CR12 A 100R PM5 A
3352	2138	101	00369	CABON RES. CR-12 1/6W 0 OHM
3353	2138	101	00369	CABON RES. CR-12 1/6W 0 OHM
3354	2138	101	00369	CABON RES. CR-12 1/6W 0 OHM
3359	2138	101	00369	CABON RES. CR-12 1/6W 0 OHM
3361	2322	730	61478	RST SM 0805 RC11 4R7 PM5 R
3362	2322	730	61478	RST SM 0805 RC11 4R7 PM5 R
3372	2322	730	91002	RST SM 0805 JUMP. MAX 0R05 T
3376	2322	730	91002	RST SM 0805 JUMP. MAX 0R05 T
3378	2322	730	91002	RST SM 0805 JUMP. MAX 0R05 T
3379	2322	730	91002	RST SM 0805 JUMP. MAX 0R05 T
3401▲	2322	207	33478	MET FLM NFR25H 4R7 PM5
3402▲	2322	207	33478	MET FLM NFR25H 4R7 PM5
3403	2138	101	13471	RST CRB CR12 A 470R PM5 A
3404	2138	101	13471	RST CRB CR12 A 470R PM5 A
3406	2138	116	12202	RST MFLM MF50S A 2K2 PM1 A
3407▲	2322	207	33229	RST MFLM NFR25H S 22R PM5
3408▲	2322	207	33229	RST MFLM NFR25H S 22R PM5
3411	2138	116	11501	RST MFLM MF50S A 150R PM1 A
3412	2138	116	04248	RST MFLM MF-50S A 2R4 PM5 A
3413	2138	116	04278	RST MFLM MF50S A 2R7 PM5 A
3414	2138	116	11009	RST MFLM MF50S A 10R PM1 A
3415	2138	116	04438	RST MFLM MF-50S A 4R3 PM5 A
3416	2138	116	12202	RST MFLM MF50S A 2K2 PM1 A
3418	2138	116	04438	RST MFLM MF-50S A 4R3 PM5 A
3421	2138	101	13221	RST CRB CR12 A 220R PM5 A
3501	2138	101	13472	RST CRB CR12 A 4K7 PM5 A
3502	2138	101	13683	RST CRB CR12 A 68K PM5 A
3503	2138	116	15603	RST MFLM MF50S A 56K PM1 A
3504	2138	116	12203	RST MFLM MF50S A 22K PM1 A
3507	2322	730	61472	RST SM 0805 RC11 4K7 PM5 R
3511	2138	101	13473	RST CRB CR12 A 47K PM5 A
3512	2138	101	13473	RST CRB CR12 A 47K PM5 A
3513	2138	101	13471	RST CRB CR12 A 470R PM5 A
3515	2138	101	13153	RST CRB CR12 A 15K PM5 A
3517	2138	365	00101	RTRM 200K V RVM08VP01-2-204M
3518	2322	730	61104	RES 100K RC-11 SMD 0805 T
3522▲	2322	207	33478	MET FLM NFR25H 4R7 PM5
3523	2138	101	13332	RST CRB CR12 A 3K3 PM5 A
3524	2138	116	11302	RST MFLM MF50S A 1K3 PM1 A
3525	2138	116	12802	RST MFLM MF50S A 2K8 PM1 A

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3526	2138	116	11203	RST MFLM MF50S A 12K PM1 A
3527	2138	101	13103	RST CRB CR12 A 10K PM5 A
3528	2138	101	13822	RST CRB CR12 A 8K2 PM5 A
3530	2322	730	61101	RST SM 0805 RC11 100R PM5 R
3531	2138	116	12703	RST MFLM MF50S A 27K PM1 A
3532	2138	116	11004	RST MFLM MF50S A 100K PM1 A
3533	2322	730	61183	RST SM 0805 RC 11 18K PM5 R
3534	2138	101	13681	RST CRB CR12 A 680R PM5 A
3535	2138	101	13561	RST CRB CR12 A 560R PM5 A
3536	2322	730	61333	RES 33K 0805 SMD
3537	2322	730	61222	RST SM 0805 RC11 2K2 PM5 R
3538	2322	730	61152	RST SM 0805 RC11 1K5 PM5 R
3539	2322	730	61101	RST SM 0805 RC11 100R PM5 R
3541	2138	101	13334	RST CRB CR12 A 330K PM5 A
3544	2138	101	13183	RST CRB CR12 A 18K PM5 A
3545	2138	101	13124	RST CRB CR12 A 120K PM5 A
3546	2138	101	13183	RST CRB CR12 A 18K PM5 A
3553	2138	116	12203	RST MFLM MF50S A 22K PM1 A
3554	2138	112	73102	CARBRST FLM CR25 1K0 PM5 5
3555	2138	112	73102	CARBRST FLM CR25 1K0 PM5 5
3556	2322	730	61332	RES 3K3 0805 SMD
3557	2138	116	14304	RST MFLM MF50S A 430K PM1 A
3558	2138	116	13904	RST MFLM MF50S A 390K PM1 A
3561	2138	365	00076	RTRM CER LIN 10K H VG067TL1 B
3562	2322	730	61752	RST SM 0805 RC11 7K5 PM5 R
3563	2138	101	13104	RST CRB CR12 A 100K PM5 A
3564	2322	730	61222	RST SM 0805 RC11 2K2 PM5 R
3566	2138	101	13153	RST CRB CR12 A 15K PM5 A
3567	2138	101	13101	RST CRB CR12 A 100R PM5 A
3568	2138	101	13101	RST CRB CR12 A 100R PM5 A
3569	2138	101	13471	RST CRB CR12 A 470R PM5 A
3601▲	2322	730	61223	RES 22K 0805 SMD
3603▲	2322	207	33689	RST FUSE NFR25H S 68R PM5 T
3604	2322	730	61563	RES 56K 0805 SMD
3605▲	2322	207	33478	MET FLM NFR25H 4R7 PM5
3606	2322	730	61104	RES 100K RC-11 SMD 0805 T
3607▲	2322	207	33108	MET FLM RST NFR25H 1R0 PM5 T
3608	2138	116	15103	RST MFLM MF50S A 51K PM1 A
3609	2138	116	04475	RST MFLM MF50S A 4M7 PM5
3610	2138	116	17502	RST MFLM MF50S A 7K5 PM1 A
3611	2138	116	17502	RST MFLM MF50S A 7K5 PM1 A
3612	2322	730	61223	RES 22K 0805 SMD
3613	2138	101	13562	RST CRB CR12 A 5K6 PM5 A
3614	2138	101	13103	RST CRB CR12 A 10K PM5 A
3615	2138	101	13471	RST CRB CR12 A 470R PM5 A
3616	2138	116	18204	RST MFLM MF50S A 820K PM1 A
3617	2138	101	13391	RST CRB CR12 A 390R PM5 A
3618	2138	116	14704	RST MFLM MF50S A 470K PM1 A
3619▲	2322	207	33108	MET FLM RST NFR25H 1R0 PM5 T
3620	2138	116	11005	RST MFLM MF50S A 1M PM1 A
3621	2120	105	92157	MET FLM RST 2W 150R PM5 6E B
3622	2322	242	13685	RST MGL VR37 A 6M8 PM5
3623	2120	105	92167	MEF FLM RST 2W 8.2K PM5 RSS B
3624	2138	101	13102	RST CRB CR12 A 1K PM5 A
3625	2138	105	00081	RST MOX 3W RSU S 2R2 PM5 B
3626	2138	116	11009	RST MFLM MF50S A 10R PM1 A
3627	2138	101	13102	RST CRB CR12 A 1K PM5 A
3628	2138	101	13103	RST CRB CR12 A 10K PM5 A
3629	2138	101	13101	RST CRB CR12 A 100R PM5 A
3631▲	2322	207	33109	RST MFLM NFR25H S 10R PM5
3632▲	2322	207	33109	RST MFLM NFR25H S 10R PM5
3633	2322	730	61223	RES 22K 0805 SMD
3634	2322	730	61222	RST SM 0805 RC11 2K2 PM5 R
3635	2322	730	61223	RES 22K 0805 SMD
3636	2322	730	61512	RES 5.1K RC-11 SMD 0805 T
3637	2322	730	61122	RST SMC 0805 RC11 1K2 PM5 T
3638	2322	730	61103	RES 10K RC-11 SMD 0805 T
3639	2138	101	13101	RST CRB CR12 A 100R PM5 A
3640▲	2322	207	33478	MET FLM NFR25H 4R7 PM5
3642	2120	105	92403	MET FLM RSS1J 1W 180R PM5 L125
3643	2138	116	12009	RES MF50S 1/2W 20R PM1
3644	2138	116	12009	RES MF50S 1/2W 20R PM1
3645	2322	242	13104	METGLAZ RST A VR37 100K
3646	2322	242	13684	METGLAZ RST A VR37 680K PM5
3648	2322	242	13684	METGLAZ RST A VR37 680K PM5
3649	2138	116	12009	RES MF50S 1/2W 20R PM1
3650	2138	112	73221	CARBRST FLM CR25 220R PM5
3652	2138	101	13102	RST CRB CR12 A 1K PM5 A
3653	2322	730	61562	RES 5.6K RC-11 SMD 0805 T
3654	2138	101	13222	RST CRB CR12 A 2K2 PM5 A
3655	2138	116	12009	RES MF50S 1/2W 20R PM1
3656	2138	116	12009	RES MF50S 1/2W 20R PM1
3657	2138	101	13473	RST CRB CR12 A 47K PM5 A
3658	2138	101	13473	RST CRB CR12 A 47K PM5 A
3659	2322	730	61331	RST SM 0805 RC11 330R PM5 T
3662	2138	101	13473	RST CRB CR12 A 47K PM5 A
3681	2322	207	33109	RST MFLM NFR25H S 10R PM5
3682	2138	116	16203	RST MFLM MF50S A 62K PM1 A
3683	2138	116	11004	RST MFLM MF50S A 100K PM1 A
3685	2138	116	11804	RST MFLM MF50S A 180K PM1 A
3687	2138	116	15102	RST MFLM MF50S A 5K1 PM1 A
3688	2138	116	12202	RST MFLM MF50S A 2K2 PM1 A
3691	2138	101	13103	RST CRB CR12 A 10K PM5 A
3692	2138	101	13103	RST CRB CR12 A 10K PM5 A
3693	2138	101	13752	RST CRB CR12 A 7K5 PM5 A
3694	2322	730	61272	RES 2K7 0805 SMD
3695	2138	101	13102	RST CRB CR12 A 1K PM5 A
3696	2138	116	14709	RST MFLM MF50S A 47R PM1 A
3698▲	2322	207	33109	RST MFLM NFR25H S 10R PM5
3699	8238	274	36561	RTRM CER LIN 500K H VG067TL1 B
3701	2138	101	00369	CABON RES. CR-12 1/6W 0 OHM
3702	2138	101	00369	CABON RES. CR-12 1/6W 0 OHM
3703	2138	101	13339	RST CRB CR12 A 33R PM5 A
3704	2138	101	13471	RST CRB CR12 A 470R PM5 A
3705	2138	101	13471	RST CRB CR12 A 470R PM5 A
3706	2138	101	13471	RST CRB CR12 A 470R PM5 A
3707	2322	730	61101	RST SM 0805 RC11 100R PM5 R
3709	2138	101	13221	RST CRB CR12 A 220R PM5 A
3713	2138	101	13339	RST CRB CR12 A 33R PM5 A
3716	2138	101	13339	RST CRB CR12 A 33R PM5 A
3718	2138	101	13479	RST CRB CR12 A 47R PM5 A
3719	2138	101	13479	RST CRB CR12 A 47R PM5 A
3720	2138	101	13479	RST CRB CR12 A 47R PM5 A
3721	2120	101	28829	C.C RES 1/2W 82R PM10
3722	2138	112	73105	CARBRST FLM CR25 1M0 PM5
3723	2138	101	13821	RST CRB CR12 A 820R PM5 A
3724	2138	116	11503	RST MFLM MF50S A 15K PM1 A
3725	2322	730	61274	SMD R0805 270K PM5 R
3726	2138	112	73683	CARBRST FLM CR25 68K PM5
3727	2138	101	13153	RST CRB CR12 A 15K PM5 A
3728	2138	112	73109	CARBRST FLM CR25 10R PM5
3729	2138	101	13479	RST CRB CR12 A 47R PM5 A
3730	2322	730	61105	RES 1M RC-11 SMD 0805 T
3731	2120	101	28829	C.C RES 1/2W 82R PM10
3732	2138	112	73105	CARBRST FLM CR25 1M0 PM5
3733	2138	101	13821	RST CRB CR12 A 820R PM5 A
3734	2138	116	11503	RST MFLM MF50S A 15K PM1 A
3735	2322	730	61274	SMD R0805 270K PM5 R
3736	2138	112	73683	CARBRST FLM CR25 68K PM5
3737	2138	112	73153	CARBRST FLM CR25 15K PM5
3738	2138	112	73109	CARBRST FLM CR25 10R PM5
3740	2322	730	91002	RST SM 0805 JUMP. MAX 0R05 T
3741	2322	730	61105	RES 1M RC-11 SMD 0805 T
3742	2322	730	61105	RES 1M RC-11 SMD 0805 T
3743	2322	730	61101	RST SM 0805 RC11 100R PM5 R
3744	2322	730	61101	RST SM 0805 RC11 100R PM5 R
3745	2322	730	61101	RST SM 0805 RC11 100R PM5 R
3751	2120	101	28829	C.C RES 1/2W 82R PM10
3752	2138	112	73105	CARBRST FLM CR25 1M0 PM5
3753	2138	101	13821	RST CRB CR12 A 820R PM5 A
3754	2138	116	11503	RST MFLM MF50S A 15K PM1 A
3755	2322	730	61274	SMD R0805 270K PM5 R
3756	2138	112	73683	CARBRST FLM CR25 68K PM5
3757	2138	112	73153	CARBRST FLM CR25 15K PM5
3758	2138	112	73109	CARBRST FLM CR25 10R PM5
3759	2322	205	33228	MET FLM RST A NFR25 2R2 P5 T
3761	2322	730	61102	RST SMC 0805 RC11 1K PM5 T
3762	2322	730	61103	RES 10K RC-11 SMD 0805 T
3763	2322	730	61332	RES 3K3 0805 SMD
3764	2322	730	61472	RST SM 0805 RC11 4K7 PM5 R
3765	2322	730	61682	RES 6K8 0805 SMD
3767	2322	730	61472	RST SM 0805 RC11 4K7 PM5 R
3771	2120	101	28152	CARBRST COMP 1/2W 1K5 PM10
3772	2120	101	28153	CARBRST COMP 1/2W 15K PM10
3776	2138	101	13101	RST CRB CR12 A 100R PM5 A
3777	2322	730	61101	RST SM 0805 RC11 100R PM5 R
3778	2138	101	13102	RST CRB CR12 A 1K PM5 A
3811	2138	101	13103	RST CRB CR12 A 10K PM5 A
3812	2138	101	13472	RST CRB CR12 A 4K7 PM5 A
3813	2322	730	61472	RST SM 0805 RC11 4K7 PM5 R
3814	2138	101	13472	RST CRB CR12 A 4K7 PM5 A
3815	2138	101	13221	RST CRB CR12 A 220R PM5 A
3816	2322	730	61221	RES 220R 0805 SMD RC-11 T
3817	2138	101	13101	RST CRB CR12 A 100R PM5 A
3818	2138	101	13101	RST CRB CR12 A 100R PM5 A
3819	2322	730	61102	RST SMC 0805 RC11 1K PM5 T
3821	2322	730	61472	RST SM 0805 RC11 4K7 PM5 R
3822	2322	730	61222	RST SM 0805 RC11 2K2 PM5 R
3823	2322	730	61472	RST SM 0805 RC11 4K7 PM5 R
3824	2138	101	13103	RST CRB CR12 A 10K PM5 A
3825	2138	101	13472	RST CRB CR12 A 4K7 PM5 A
3826	2138	101	13101	RST CRB CR12 A 100R PM5 A
3827	2322	730	61103	RES 10K RC-11 SMD 0805 T
3828	2138	101	13101	RST CRB CR12 A 100R PM5 A
3829	2138	101	13101	RST CRB CR12 A 100R PM5 A
3833	2322	730	61472	RST SM 0805 RC11 4K7 PM5 R
3834	2322	730	61332	RES 3K3 0805 SMD
3835	2322	730	61103	RES 10K RC-11 SMD 0805 T
3836	2138	116	13303	RST MFLM MF50S A 33K PM1 A
3837	2138	101	13103	RST CRB CR12 A 10K PM5 A
3838	2138	101	13101	RST CRB CR12 A 100R PM5 A
3838	2138	101	13101	RST CRB CR12 A 100R PM5 A
3841	2138	101	13101	RST CRB CR12 A 100R PM5 A
3842	2138	101	13101	RST CRB CR12 A 100R PM5 A
3843	2138	101	13103	RST CRB CR12 A 10K PM5 A
3844	2322	730	61472	RST SM 0805 RC11 4K7 PM5 R
3845	2322	730	61223	RES 22K 0805 SMD
3846	2322	730	61472	RST SM 0805 RC11 4K7 PM5 R
3847	2322	730	61472	RST SM 0805 RC11 4K7 PM5 R
3848	2138	101	13103	RST CRB CR12 A 10K PM5 A
3851	2138	101	13103	RST CRB CR12 A 10K PM5 A
3852	2322	730	61153	RST SM 0805 RC11 15K PM5 R
3852	2322	730	61153	RST SM 0805 RC11 15K PM5 R
3853	2138	101	13103	RST CRB CR12 A 10K PM5 A
3854	2322	730	61473	RST SM 0805 RC11 47K PM5 R
3855	2138	101	13471	RST CRB CR12 A 470R PM5 A
3859	2138	101	13101	RST CRB CR12 A 100R PM5 A
3863	2138	101	13472	RST CRB CR12 A 4K7 PM5 A
3865	2138	101	13101	RST CRB CR12 A 100R PM5 A
3869	2138	101	13272	RST CRB CR12 A 2K7 PM5 A
3871	2138	101	13472	RST CRB CR12 A 4K7 PM5 A
3891	2138	116	11004	RST MFLM MF50S A 100K PM1 A

3892	2138	116	15603	RST MFLM MF50S A 56K PM1 A
3893	2138	116	14702	RST MFLM MF50S A 4K7 PM1 A
3894	2138	116	11503	RST MFLM MF50S A 15K PM1 A
3895	2138	116	12403	RST MFLM MF50S A 24K PM1 A

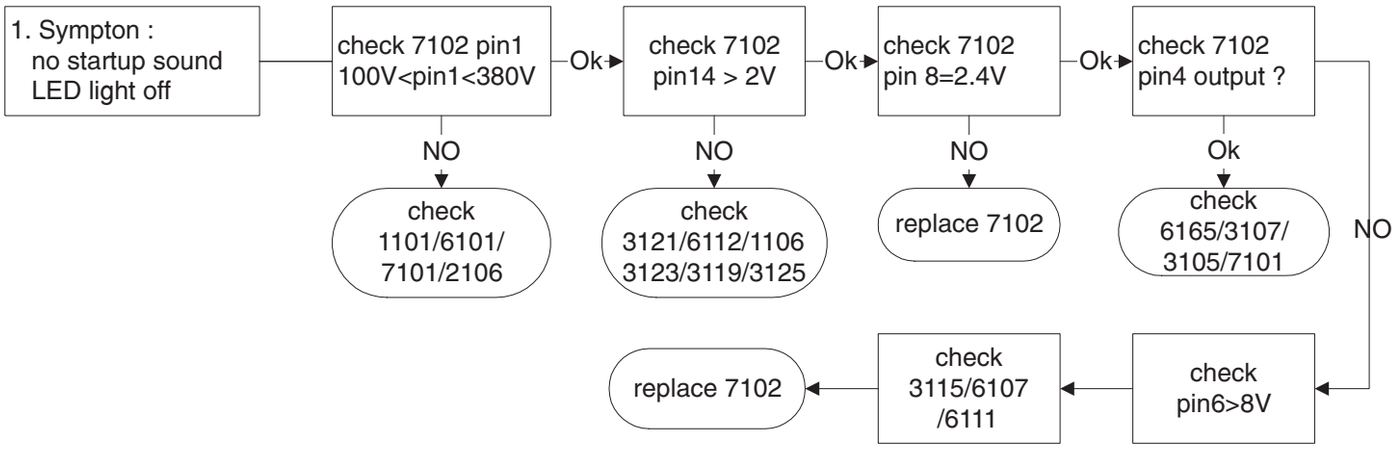
5007	3138	168	73371	DEGAUSSING COIL
5008	3138	178	76731	ROTATION COIL MARKING : 8423
5102	2438	535	98058	IND FXD BEAD EMI 100 MHZ 80R R
5103	2438	535	98058	IND FXD BEAD EMI 100 MHZ 80R R
5106	3138	178	79161	BAR COIL 7U5H PM10
5108▲	3138	128	71291	LINE FILTER
5111	3138	178	79161	BAR COIL 7U5H PM10
5113▲	3138	168	72851	POWER TRANSFORMER (SRW35EC-T56V118)
5114	2438	535	98058	IND FXD BEAD EMI 100 MHZ 80R R
5123	2422	535	94971	DRUM CHOKE COIL 100UH T
5124	2422	535	94971	DRUM CHOKE COIL 100UH T
5125	2422	535	94971	DRUM CHOKE COIL 100UH T
5301	2422	535	97608	COIL 1MUH8 PM10
5303	3138	168	72621	BEAD COIL (BF30TA-2.5X3X1B)
5601	3138	178	77941	LINEARITY COIL
5603	2438	535	98058	IND FXD BEAD EMI 100 MHZ 80R R
5606	3138	128	71701	BRIDG COIL 110UH
5607	2438	535	98058	IND FXD BEAD EMI 100 MHZ 80R R
5608	2438	535	98058	IND FXD BEAD EMI 100 MHZ 80R R
5609	2438	535	98058	IND FXD BEAD EMI 100 MHZ 80R R
5611	2422	535	97416	COIL 33MUH PM10
5612	3138	168	73091	L.O.T. (LCE)
5615	3138	128	75441	HOR. DRIVER TRANSFORMER
5616	3138	178	75991	DRUM CHOKE COIL 6MH
5617	2438	535	98058	IND FXD BEAD EMI 100 MHZ 80R R
5621	2422	535	94973	DRUM CHOKE COIL 3.7MHB T
5671	3138	168	77381	DAF XFMR (SRW16EC-T119V003)
5701	2422	535	97608	COIL 1MUH8 PM10
5702	2422	535	97608	COIL 1MUH8 PM10
5721	2422	535	97065	COIL 0.82MUH PM20 T
5723	2422	535	97608	COIL 1MUH8 PM10
5732	2422	535	97065	COIL 0.82MUH PM20 T
5733	2422	535	97608	COIL 1MUH8 PM10
5752	2422	535	97065	COIL 0.82MUH PM20 T
5753	2422	535	97608	COIL 1MUH8 PM10
5772	3138	168	72621	BEAD COIL (BF30TA-2.5X3X1B)
5773	3138	168	72621	BEAD COIL (BF30TA-2.5X3X1B)
5774	3138	168	72621	BEAD COIL (BF30TA-2.5X3X1B)
5779	2422	535	97608	COIL 1MUH8 PM10
5781	2422	535	94971	DRUM CHOKE COIL 100UH T

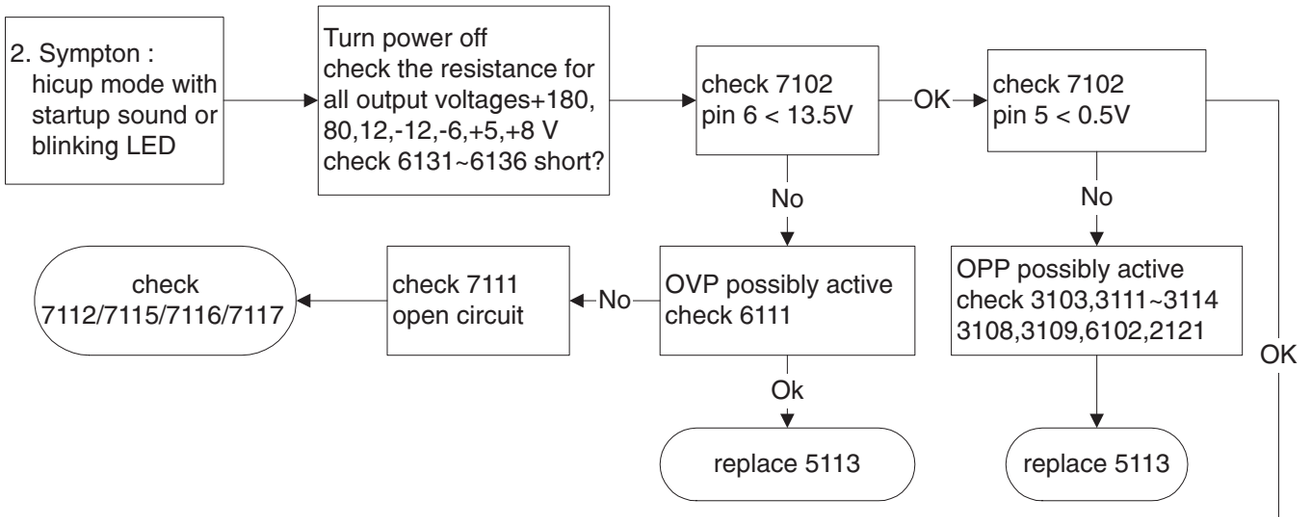
6101	9322	058	14682	BRIDGE GBU4K
6102	3198	010	27591	DIODE BZX79-C75(UAW)
6103	9334	979	50683	DIODE RGP10J (GI)
6106	3198	010	10071	DIODE BAV21 (UAW)
6107	3198	010	10071	DIODE BAV21 (UAW)
6111	3198	010	22481	DIODE BZX79-C2V4 (UAW)
6112	3198	010	27591	DIODE BZX79-C75(UAW)
6113	9339	139	10115	SMD DIODE BAS32L
6114	9339	139	10115	SMD DIODE BAS32L
6118	9339	139	10115	SMD DIODE BAS32L
6121	3198	010	10011	DIODE 1N4148 (UAW)
6122	9339	139	10115	SMD DIODE BAS32L
6131	9338	185	00133	DIODE BYM26C
6132	9337	516	60683	DIODE RGP10D (GI)
6133	9338	185	00133	DIODE BYM26C
6134	9335	434	90133	DIO REC BYV27-50
6135	9335	435	00133	DIO REC BYV27-100
6136	9337	516	60683	DIODE RGP10D (GI)
6141	9337	516	60683	DIODE RGP10D (GI)
6142	9334	979	50683	DIODE RGP10J (GI)
6143	9339	139	10115	SMD DIODE BAS32L
6144	3198	010	21591	DIODE BZX79-C15 (UAW)
6146	9339	139	10115	SMD DIODE BAS32L
6165	3198	010	21591	DIODE BZX79-C15 (UAW)
6251	3198	010	21591	DIODE BZX79-C15 (UAW)
6252	3198	010	21591	DIODE BZX79-C15 (UAW)
6253	3198	010	21591	DIODE BZX79-C15 (UAW)
6301	3198	010	25681	DIODE BZX79-C5V6 (UAW)
6302	3198	010	25681	DIODE BZX79-C5V6 (UAW)
6303	3198	010	25681	DIODE BZX79-C5V6 (UAW)
6304	3198	010	25681	DIODE BZX79-C5V6 (UAW)
6401	9335	435	00133	DIO REC BYV27-100
6402	9322	129	87673	DIODE BZX85-C18
6405	9322	129	87673	DIODE BZX85-C18
6501	3198	010	21191	DIODE BZX79-C11V
6511	9337	516	60683	DIODE RGP10D (GI)
6512	9339	139	10115	SMD DIODE BAS32L
6514	9339	139	10115	SMD DIODE BAS32L
6517	3198	010	10011	DIODE 1N4148 (UAW)
6521	9339	139	10115	SMD DIODE BAS32L
6600	8238	274	33831	DIODE DMV32
6601	3198	010	10071	DIODE BAV21 (UAW)
6602	3198	010	21591	DIODE BZX79-C15 (UAW)
6603	9322	057	87683	DIODE EGP20G
6604	9337	516	60683	DIODE RGP10D (GI)
6605	9337	516	60683	DIODE RGP10D (GI)
6606	9334	979	50683	DIODE RGP10J (GI)
6607	3198	010	10011	DIODE 1N4148 (UAW)
6608	3198	010	25181	DIODE BZX79-C5V1 (UAW)
6609	9339	139	10115	SMD DIODE BAS32L
6611	9337	516	60683	DIODE RGP10D (GI)
6612	9335	434	90133	DIO REC BYV27-50
6613	9340	317	00113	DIODE BYD33V
6615	3198	010	21591	DIODE BZX79-C15 (UAW)
6616	3198	010	21591	DIODE BZX79-C15 (UAW)
6711	3198	010	25181	DIODE BZX79-C5V1 (UAW)
6721	3198	010	10531	SMD DIODE BAV103
6722	3198	010	10071	DIODE BAV21 (UAW)
6724	3198	010	10531	SMD DIODE BAV103
6731	3198	010	10531	SMD DIODE BAV103
6732	3198	010	10071	DIODE BAV21 (UAW)
6734	3198	010	10531	SMD DIODE BAV103
6751	3198	010	10071	DIODE BAV21 (UAW)
6752	3198	010	10071	DIODE BAV21 (UAW)
6754	3198	010	10531	SMD DIODE BAV103
6771	9337	516	60683	DIODE RGP10D (GI)
6802	3198	010	10011	DIODE 1N4148 (UAW)
6891	9322	146	03682	LED L-3WYGW

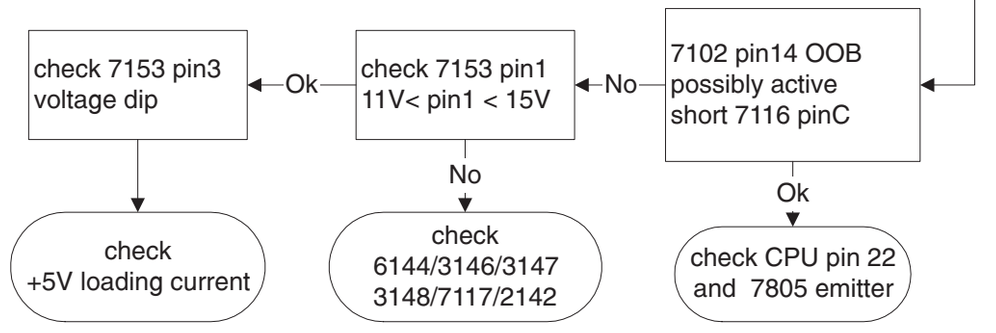
7101	9322	135	00687	MOS TRANSTER SSP7N60A
7102	9352	645	03112	IC TEA1504AP/N2 14P
7103	3198	020	43591	TRANS. BC338-40
7111▲	9322	140	14667	PHOTOCOUPLER TCET1103G 4P
7112	9337	711	00686	IC TL431CLPRP 3P
7113	9335	282	90682	IC MC7808CT 3P
7114	9335	107	20686	IC MC78L05ACPRP 3P
7115	9338	268	50126	TRANS BT169B T
7116	3198	020	43011	TRANS BF422 (UAW)
7117	3198	020	40081	TRANS BC548C (UAW)
7118	3198	020	40041	TRANS BC547C (UAW)
7251	3198	020	40081	TRANS BC548C (UAW)
7252	9322	067	50676	TRA SIG BF420 S (TOSJ)
7253	9322	067	50676	TRA SIG BF420 S (TOSJ)
7254	9322	067	50676	TRA SIG BF420 S (TOSJ)
7262	9322	133	09687	IRF640A
7263	9322	133	09687	IRF640A
7264	9322	133	09687	IRF640A
7267	3198	020	40081	TRANS BC548C (UAW)
7301	9352	613	72112	IC TDA4886/V1 24P
7302	9352	674	03112	VE IC TDA 4822
7303	9322	106	11676	IC LE33CZ-AP 3P
7304	8238	274	34421	OSD IC MTV018-27
7322	3198	020	40081	TRANS BC548C (UAW)
7401	9322	144	36687	IC TDA8177F 7P
7501	9352	637	56112	IC TDA4841PS-V2 32P
7502	3198	020	43311	TRANS PH2369 (UAW)
7503	3198	020	43021	TRANS BF423 (UAW)
7505	3198	020	43311	TRANS PH2369 (UAW)
7506	3198	020	40081	TRANS BC548C (UAW)
7508	3198	020	40161	TRANS BC558C (UAW)
7511	3198	020	40081	TRANS BC548C (UAW)
7512	3198	020	40081	TRANS BC548C (UAW)
7601	3198	020	43591	TRANS. BC338-40
7602	3198	020	43491	TRANS BC328-40
7603	9322	090	21687	FET POW IRF9620
7604	3198	020	40081	TRANS BC548C (UAW)
7605	9340	039	60126	TRANS BSN254A
7606	9340	299	10127	TRANSTER BU2522AF
7607	9335	671	30126	TRANS BC517
7608	9335	671	20126	TRANS BC516
7611	3198	010	42201	TRANS BC858C (UAW)
7612	3198	010	42081	TRANS BC848C (UAW)
7613	9311	010	33687	TRA MOW TIP122
7614	3198	020	43591	TRANS. BC338-40
7615	3198	020	40081	TRANS BC548C (UAW)
7616	3198	020	40081	TRANS BC548C (UAW)
7617	3198	020	43011	TRANS BF422 (UAW)
7618	3198	020	40161	TRANS BC558C (UAW)
7621	9333	935	10602	IC LM358N 8P (PHILIPS)
7682	3198	020	43811	TRANS BC638 (UAW)
7683	3198	020	43771	TRANS BC637 (UAW)
7685	9340	258	70126	TRA SIG MPSA44
7701	9322	145	97667	IC LM2439T 9P
7721	3198	020	43011	TRANS BF422 (UAW)
7722	3198	020	43011	TRANS BF422 (UAW)
7731	3198	020	43011	TRANS BF422 (UAW)
7732	3198	020	43011	TRANS BF422 (UAW)
7751	3198	020	43011	TRANS BF422 (UAW)
7752	3198	020	43011	TRANS BF422 (UAW)
7761	3198	020	40081	TRANS BC548C (UAW)
7801	8238	274	39611	CPU 6148-K420PH-12A 42P
7801	8238	274	38741	CPU IC WT62P2 42P
7802	3198	020	40161	TRANS BC558C (UAW)
7803	9322	126	62682	IC M24C16-BN6 8P
7805	3198	020	40081	TRANS BC548C (UAW)
7806	3198	020	40161	TRANS BC558C (UAW)

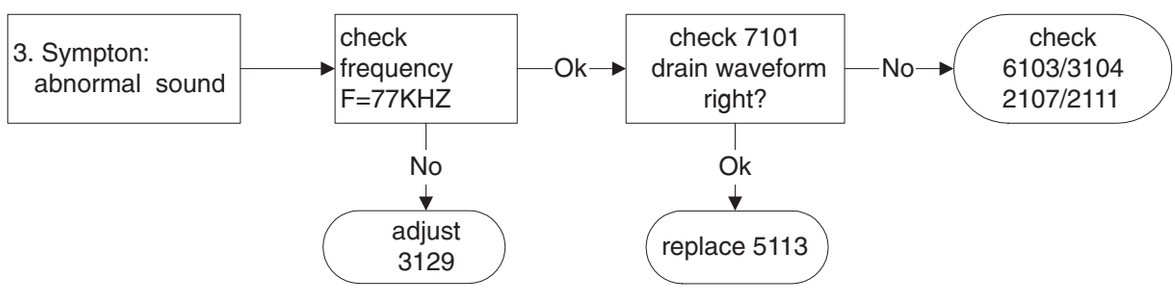
Repair Flow Chart

A. Power Supply Failure

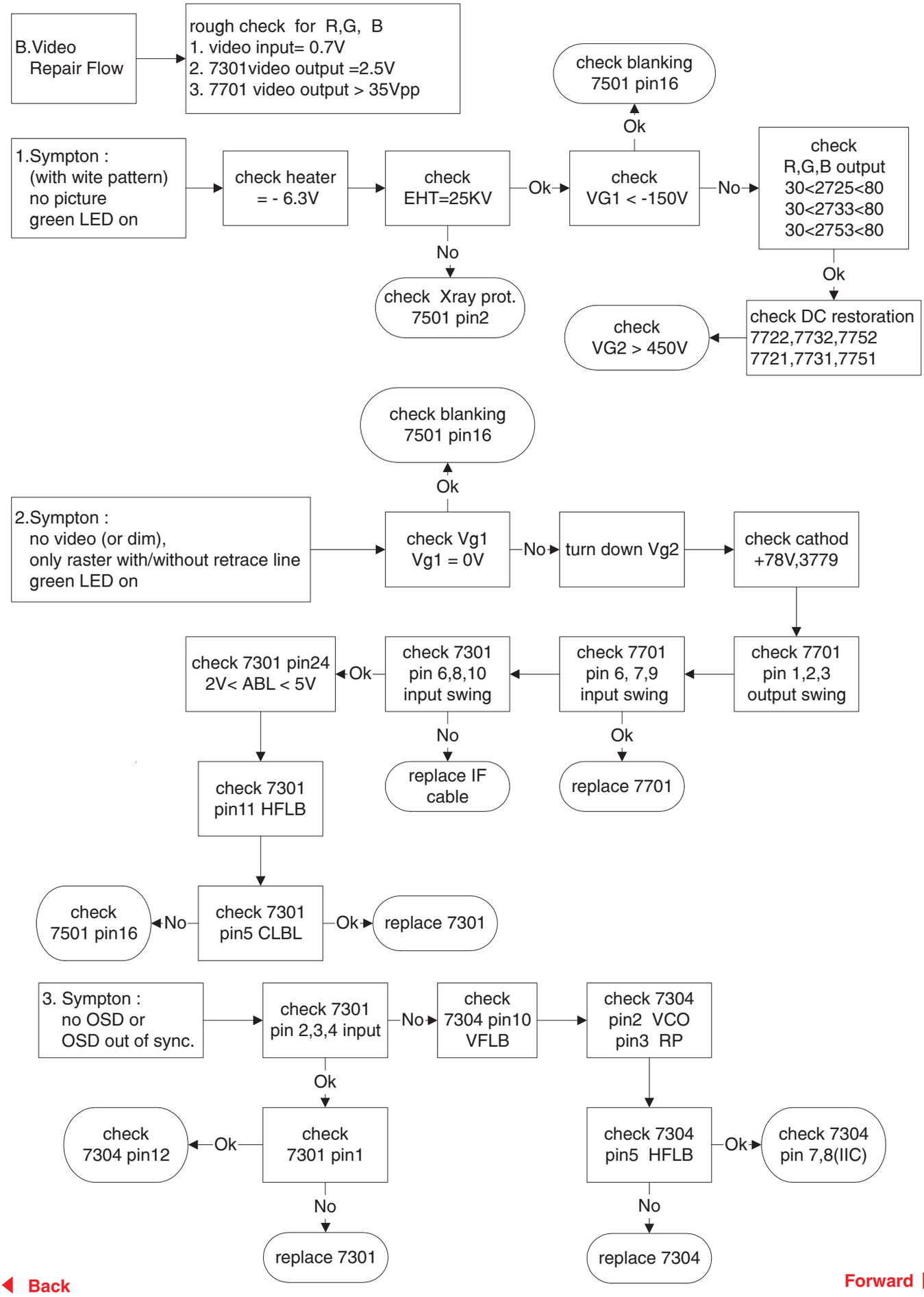






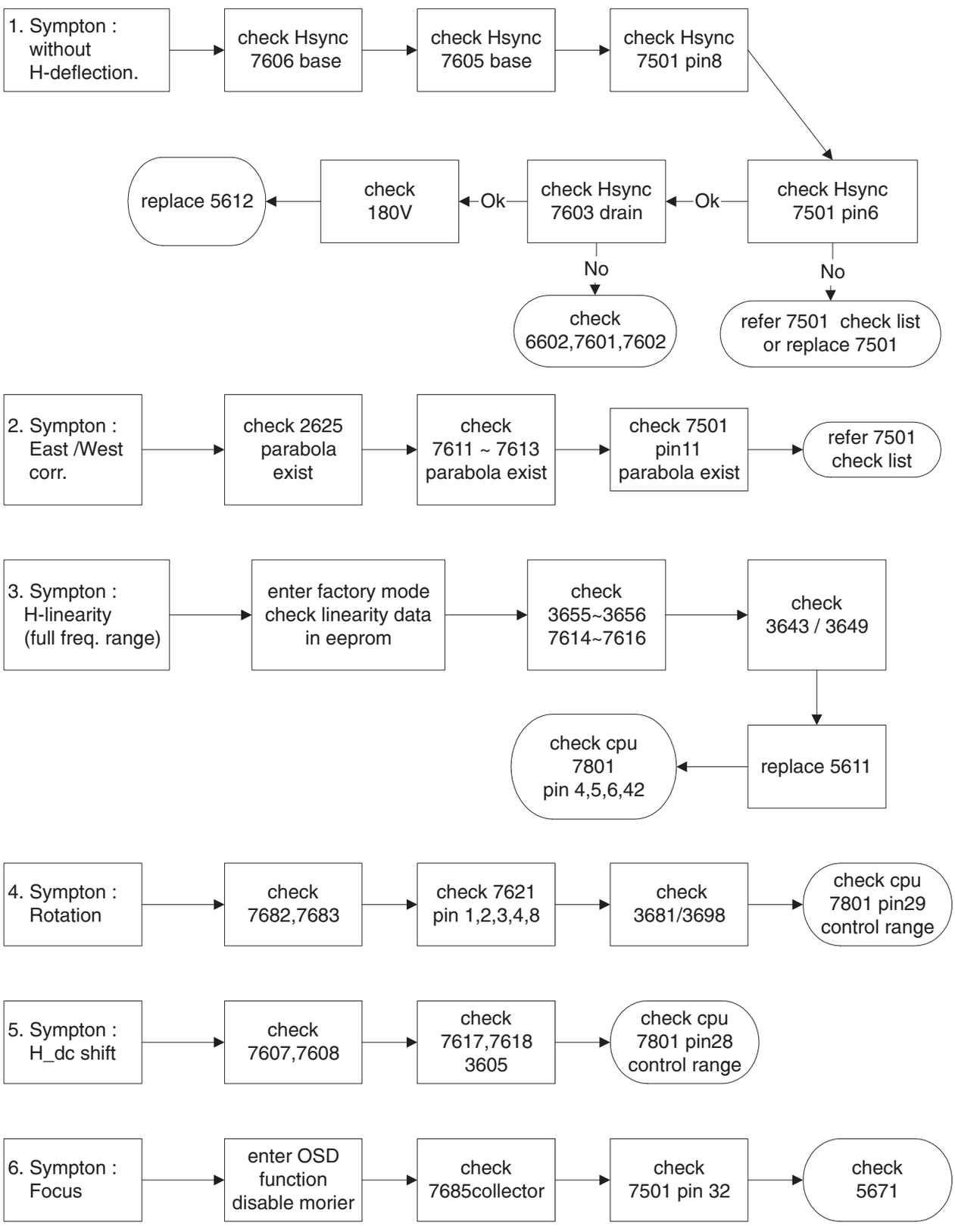


Repair Flow Chart

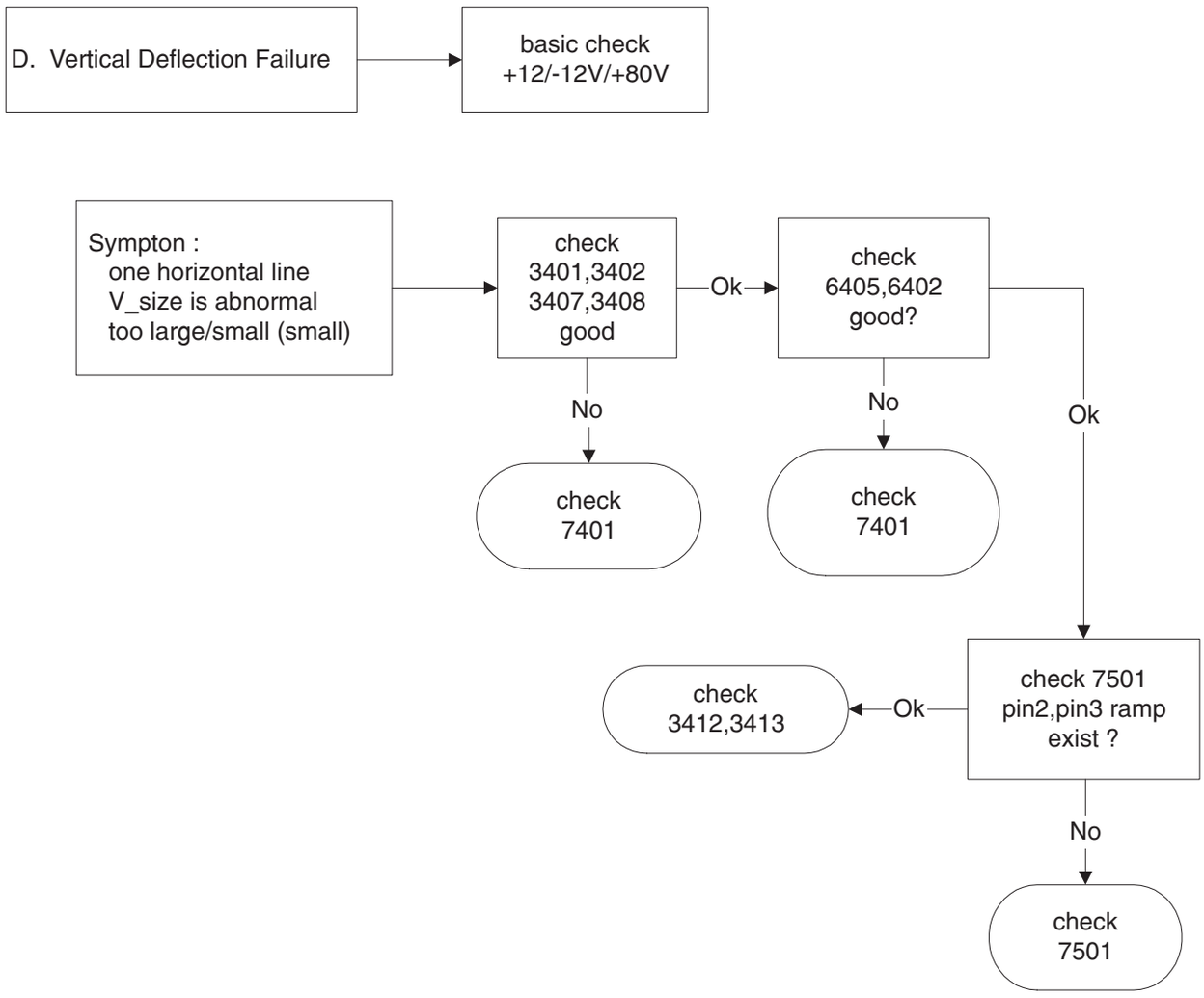


Repair Flow Chart

C. Horizontal deflection output repair flow :

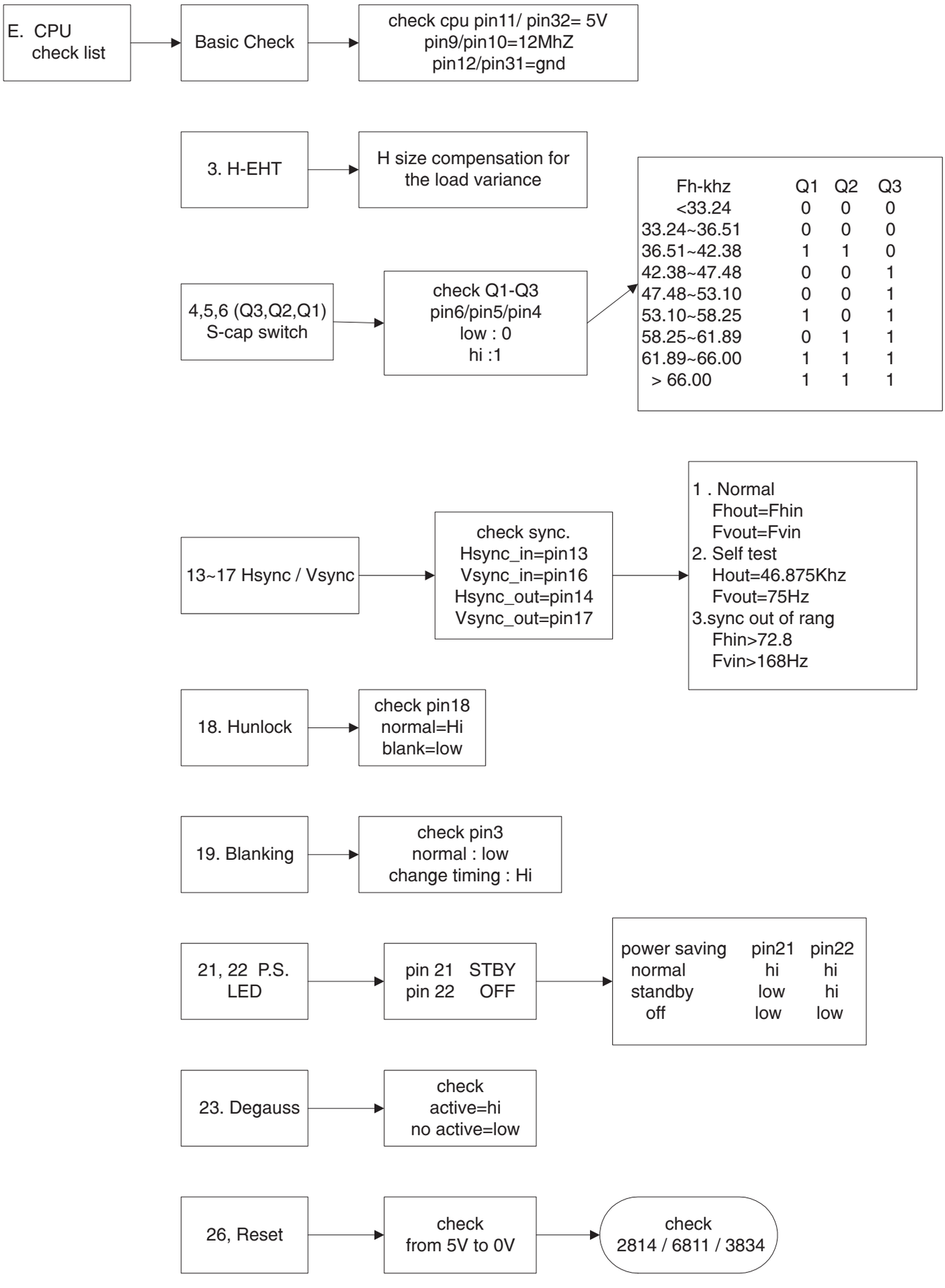


Repair Flow Chart



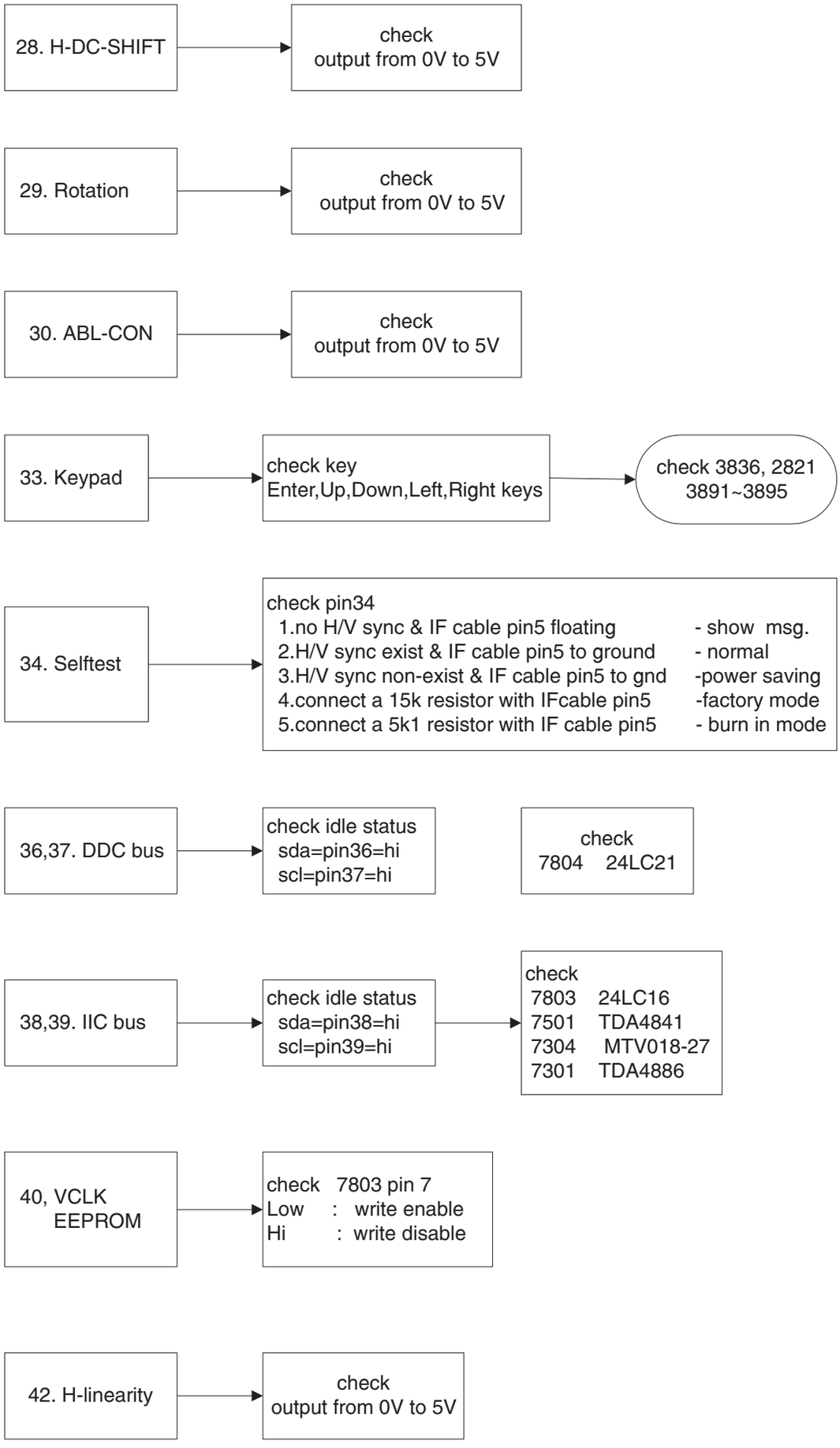
Repair Flow Chart

Go to cover page

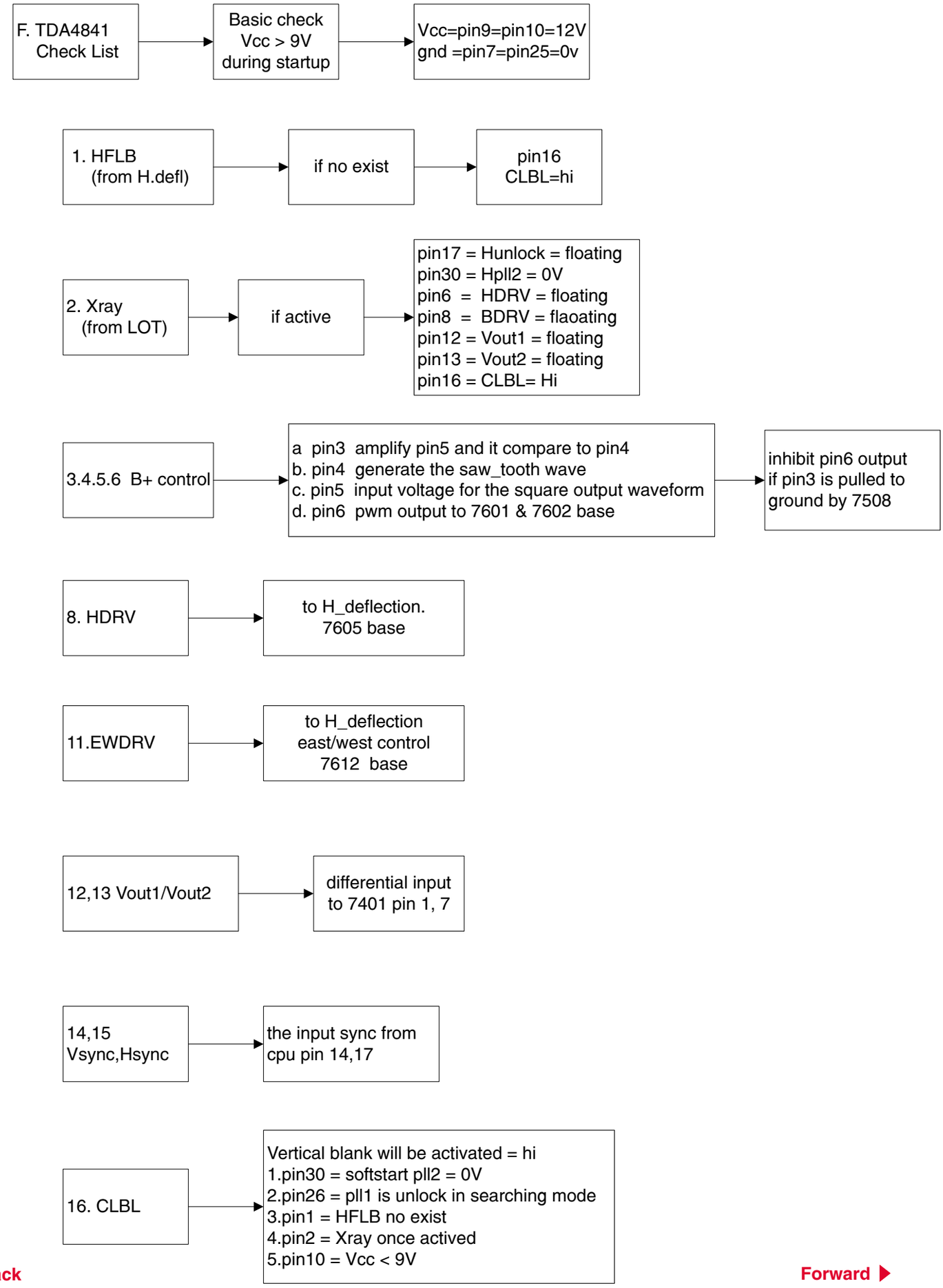


Back Forward

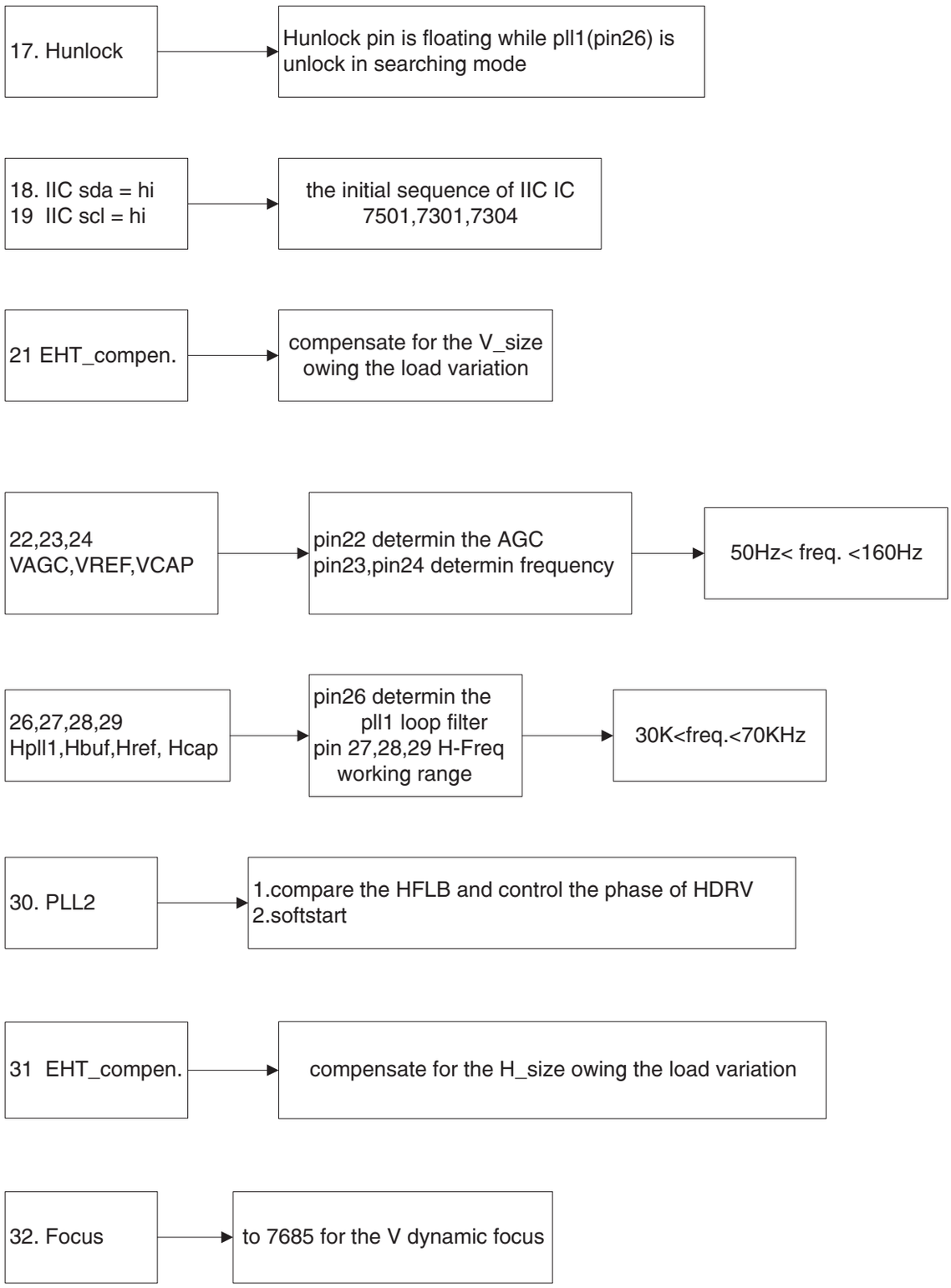
Repair Flow Chart



Repair Flow Chart


F. TDA4841 Check List
Basic check Vcc > 9V during startup
Vcc=pin9=pin10=12V gnd =pin7=pin25=0v
1. HFLB (from H.defl)
if no exist
pin16 CLBL=hi
2. Xray (from LOT)
if active
pin17 = Hunlock = floating
pin30 = Hpll2 = 0V
pin6 = HDRV = floating
pin8 = BDRV = flaoating
pin12 = Vout1 = floating
pin13 = Vout2 = floating
pin16 = CLBL= Hi
3.4.5.6 B+ control
a pin3 amplify pin5 and it compare to pin4
b. pin4 generate the saw_tooth wave
c. pin5 input voltage for the square output waveform
d. pin6 pwm output to 7601 & 7602 base
inhibit pin6 output if pin3 is pulled to ground by 7508
8. HDRV
to H_deflection. 7605 base
11.EWDRV
to H_deflection east/west control 7612 base
12,13 Vout1/Vout2
differential input to 7401 pin 1, 7
14,15 Vsync,Hsync
the input sync from cpu pin 14,17
16. CLBL
Vertical blank will be activated = hi
1.pin30 = softstart pll2 = 0V
2.pin26 = pll1 is unlock in searching mode
3.pin1 = HFLB no exist
4.pin2 = Xray once actived
5.pin10 = Vcc < 9V

Repair Flow Chart


17. Hunlock
Hunlock pin is floating while pll1(pin26) is unlock in searching mode
18. IIC sda = hi
19 IIC scl = hi
the initial sequence of IIC IC 7501,7301,7304
21 EHT_compen.
compensate for the V_size owing the load variation
22,23,24
VAGC,VREF,VCAP
pin22 determin the AGC
pin23,pin24 determin frequency
50Hz< freq. <160Hz
26,27,28,29
Hpll1,Hbuf,Href, Hcap
pin26 determin the pll1 loop filter
pin 27,28,29 H-Freq working range
30K<freq.<70KHz
30. PLL2
1.compare the HFLB and control the phase of HDRV
2.softstart
31 EHT_compen.
compensate for the H_size owing the load variation
32. Focus
to 7685 for the V dynamic focus

GENERAL PRODUCT SPECIFICATION

CM2300 107S2 (GS3 C0CA+ Chassis) 71KHz General Specification (Sheet 590)

FEATURES / BENEFITS

- Light Frame™

  Brightness and sharpness boost on user selectable windows. User interface application for Windows® 95/98/NT/2000 and MacOS 8/9. Supported languages: English, French, German, Spanish, Dutch, Portuguese (for Windows® version) and English, French, Spanish, German (for MacOS).

- EXTREMELY HIGH MTBF (OVER 75K HRS, EXCLUDING CRT)

- PROFESSIONAL LOOK, WITH NON-FLAMMABLE CABINET (94V-0)

- USER'S CONTROLS
  . FRONT MOUNTED CONTROLS FOR EASY ACCESS

- BETTER DISPLAY PERFORMANCE
  . FINER CRT DOT PITCH (0.28 MM)
  . FULL SCREEN SIZE APPLICATION
  . REAL MULTI-FREQ.

- POWER SAVING MANAGEMENT SYSTEM

- MAXIMIZED CONTAINER LOADING

- VESA DDC1 AND 2B

- LOW EMISSION MPR II /TCO99 (optional)

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CLASS NO.	17" CM 23-- GS3 CMTR TYPE : 107S21/97C (COCA+) BRAND : PHIILIPS (71K)	8639 000 10743
00-06-07		

NAME K.J.LIU	SUPERS.	29	590 — 1	10	A4
TY CHECK	DATE 00-06-07	Property of PHILIPS ELECTRONICS INDUSTRIES (TAIWAN) LTD.-B.E.			

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1.0 Introduction

This document is related to the 17" AUTOSCAN (VGA above and Max. resolution 1280X1024 by 60HZ refresh) color monitor for world-wide destination.

2.0 General description

The AUTOSCAN analog color monitor is specified as a display peripheral within an IBM PC, PS/2 ,VGA and advance VGA compatible system.

The AUTOSCAN analog color monitor is to operate at horizontal line rates between 30 to 70 KHz and refreshment rate between 50 to 160 Hz, can be applied to all RGB analog computers within this scanning frequencies.

The AUTOSCAN analog color monitor is intended to be a finished product, basically a display device mounted inside a plastic enclosure which provides the aesthetic mechanical, ergonomic and safety requirements.

2.1 General condition

The unit will produce a usable image after switching-on, measurements are to be carried out with a full stabilized set after 30 minutes warm-up at room temperature of 25XC
Repetitive power on/off cycles are allowed though should be avoided within 4 sec.

3.0 Electrical characteristics

3.1 Signal interface

The AUTOSCAN analog color display has an analog video interface to operates at a multi-frequencies timing in several display modes.

3.1.1 Input requirements

A. Input signals
Video : Analog level
Sync. : Separated sync. with TTL level
Polarity : Positive or negative

B. Signal input level
Video : 0.7 Vp-p 75 ohms (for individual of R,G and B signals must not deviate 0.015 Vp-p from each other for balance of white pattern)
Sync : TTL level
(between 0 and 0.6 V to be considered as low level ,between 2.3 and 5.0 V as high level)

C. Impedance
Video : Terminated with 75 ohms
Sync : Terminated with 4.7K ohms pull down resistors.

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3.1.2 Signals input

The input video signals are applied to the display device through a video cable which is fixed to the monitor (standard cable length 1.5M).

Video input cable :
15 pin D-shell male connector type AMP 211350-1(3 rows) or equivalent, with pin assignment as follows :

Pin assignment of 15P D-SUB connector

Pin nbr.	Assignment
P1	Red video input
P2	Green video input
P3	Blue video input
P4	GND
P5	For selftest (PC Ground)
P6	Red video ground
P7	Green video ground
P8	Blue video ground
P9	Not connected -- No pin
P10	Sync ground
P11	GND
P12	Bi-directional Data (SDA)
P13	H SYNC
P14	V SYNC (VCLK)
P15	Data clock (SCL)

3.1.3 Factory preset modes:

Factory preset modes : 8

	Resolution	H. freq.	V. freq.	H.	V.
1.	720 x 400	31.5 KHz	70Hz (VGA)	-	+
2.	640 x 480	31.47 KHz	60Hz (VGA)	-	-
3.	640 x 480	43.3 KHz	85Hz (VESA)		
4.	800 x 600	46.9 KHz	75Hz (VESA)		
5.	800 x 600	53.674KHz	85Hz (VESA)		
6.	1024 x 768	60.0 KHz	75Hz (VESA)		
7.	1024 x 768	68.7 KHz	85Hz (VESA)		
8.	1280 x 1024	64.0 KHz	60Hz (VESA)		

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Factory preload modes : 14

	Resolution	H. freq.	V. freq.
9.	640 x 350	31.5 KHz	70Hz
10.	640 x 350	37.9 KHz	85Hz
11.	640 x 480	37.5 KHz	75Hz
12.	640 x 480	37.9 KHz	72.8Hz
13.	640 x 480	50.6 KHz	100Hz
14.	720 x 400	37.9 KHz	85Hz
15.	800 x 600	37.9 KHz	60Hz
16.	800 x 600	48.1 KHz	72Hz
17.	800 x 600	63.9 KHz	100Hz
18.	832 x 624	49.7 KHz	75Hz
19.	1024 x 468	48.4 KHz	60Hz
20.	1024 x 768	56.5 KHz	70Hz
21.	1152 x 864	67.5 KHz	75Hz
22.	1280 x 960	60 KHz	60Hz

3.2 Timing requirements

The AUTOSCAN color monitor must be capable of displaying standard resolutions within the vertical(refresh) frequency range of 50 to 160 Hz and horizontal scan range of 30 - 71 KHz.

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TIMING FOR CM2300 COCA+ GS3 107S2-71K COLOR MONITOR

REFERENCE PATTERN GENERATOR : CHROMA 2135

* According VESA version 1.0 release 0.6p

Factory preset modes

TABLE 1: 31.469 KHz/70.087 Hz, 720 X 400, pixel=28.325MHz

Horizontal		Vertical	
Frame border	= 0	Frame border	= 0
Total size	= 31.774 us	Total size	= 14.268 ms
Display size	= 25.422 us	Display size	= 12.711 ms
Rear porch	= 1.907 us	Rear porch	= 1.112 ms
Sync width	= 3.813 us	Sync width	= 0.064 ms
Sync.polarity	= -	Sync.polarity	= +

TABLE 2: 31.469KHz/59.940 Hz, 640 X 480, pixel=25.175 MHz

Horizontal		Vertical	
Frame border	= 0	Frame border	= 0
Total size	= 31.778 us	Total size	= 16.683 ms
Display size	= 25.422 us	Display size	= 15.253 ms
Rear porch	= 1.907 us	Rear porch	= 1.049 ms
Sync width	= 3.813 us	Sync width	= 0.064 ms
Sync.polarity	= -	Sync.polarity	= -

TABLE 3: 43.269KHz/85.008 Hz, 640 X 480, pixel=36.000 MHz

Horizontal		Vertical	
Frame border	= 0	Frame border	= 0
Total size	= 23.111 us	Total size	= 11.764 ms
Display size	= 17.778 us	Display size	= 11.093 ms
Rear porch	= 2.222 us	Rear porch	= 0.578 ms
Sync width	= 1.556 us	Sync width	= 0.069 ms
Sync.polarity	= -	Sync.polarity	= -

TABLE 4: 46.875 KHz/75 Hz, 800 X 600, pixel=49.500 MHz

Horizontal		Vertical	
Frame border	= 0	Frame border	= 0
Total size	= 21.333 us	Total size	= 13.333 ms
Display size	= 16.162 us	Display size	= 12.800 ms
Rear porch	= 3.232 us	Rear porch	= 0.448 ms
Sync width	= 1.616 us	Sync width	= 0.064 ms
Sync.polarity	= +	Sync.polarity	= +

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TABLE 5: 53.674 KHz/85.061 Hz, 800 X 600, pixel=56.250 MHz

Horizontal		Vertical	
Frame border	= 0	Frame border	= 0
Total size	= 18.631 us	Total size	= 11.756 ms
Display size	= 14.222 us	Display size	= 11.179 ms
Rear porch	= 2.702 us	Rear porch	= 0.503 ms
Sync width	= 1.138 us	Sync width	= 0.056 ms
Sync.polarity	= +	Sync.polarity	= +

TABLE 6: 60.03 KHz/75 Hz, 1024 X 768, pixel=78.750 MHz

Horizontal		Vertical	
Frame border	= 0	Frame border	= 0
Total size	= 16.660 us	Total size	= 13.328 ms
Display size	= 13.003 us	Display size	= 12.795 ms
Rear porch	= 2.235 us	Rear porch	= 0.466 ms
Sync width	= 1.219 us	Sync width	= 0.050 ms
Sync.polarity	= +	Sync.polarity	= +

TABLE 7: 63.981 KHz/60 Hz, 1280 X 1024, pixel=108 MHz

Horizontal		Vertical	
Frame border	= 0	Frame border	= 0
Total size	= 15.630 us	Total size	= 16.661 ms
Display size	= 11.852 us	Display size	= 16.005 ms
Rear porch	= 2.296 us	Rear porch	= 0.594 ms
Sync width	= 1.037 us	Sync width	= 0.047 ms
Sync.polarity	= +	Sync.polarity	= +

TABLE 8: 68.677 KHz/85 Hz, 1024 X 768, pixel=94.500 MHz

Horizontal		Vertical	
Frame border	= 0	Frame border	= 0
Total size	= 14.561 us	Total size	= 11.765 ms
Display size	= 10.836 us	Display size	= 11.183 ms
Rear porch	= 2.201 us	Rear porch	= 0.524 ms
Sync width	= 1.016 us	Sync width	= 0.044 ms
Sync.polarity	= +	Sync.polarity	= +

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TABLE 13: 50.625 KHz/100.049 Hz, 640 X 480, pixel=40.5MHz

Horizontal		Vertical	
Frame border	= 0	Frame border	= 0
Total size	= 19.752 us	Total size	= 9.995 ms
Display size	= 15.802 us	Display size	= 9.481 ms
Rear porch	= 1.975 us	Rear porch	= 0.435 ms
Sync width	= 1.580 us	Sync width	= 0.059 ms
Sync.polarity	= -	Sync.polarity	= -

TABLE 14: 37.927 KHz/85.039 Hz, 720 X 400, pixel=35.5 MHz

Horizontal		Vertical	
Frame border	= 0	Frame border	= 0
Total size	= 26.366 us	Total size	= 11.759 ms
Display size	= 20.282 us	Display size	= 10.546 ms
Rear porch	= 3.042 us	Rear porch	= 1.107 ms
Sync width	= 2.028 us	Sync width	= 0.079 ms
Sync.polarity	= -	Sync.polarity	= +

TABLE 15: 37.879 KHz/60.317 Hz, 800 X 600, pixel=40MHz

Horizontal		Vertical	
Frame border	= 0	Frame border	= 0
Total size	= 26.400 us	Total size	= 16.579 ms
Display size	= 20.000 us	Display size	= 15.840 ms
Rear porch	= 2.200 us	Rear porch	= 0.607 ms
Sync width	= 3.200 us	Sync width	= 0.106 ms
Sync.polarity	= +	Sync.polarity	= +

TABLE 16: 48.077 KHz/72.188 Hz, 800 X 600, pixel=50MHz

Horizontal		Vertical	
Frame border	= 0	Frame border	= 0
Total size	= 20.800 us	Total size	= 13.853 ms
Display size	= 16.000 us	Display size	= 12.480 ms
Rear porch	= 1.280 us	Rear porch	= 0.478 ms
Sync width	= 2.400 us	Sync width	= 0.125 ms
Sync.polarity	= +	Sync.polarity	= +

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TABLE 17: 63.92KHz/100 Hz, 800 X 600, pixel=67.5MHz

Horizontal		Vertical	
Frame border	= 0	Frame border	= 0
Total size	= 15.644 us	Total size	= 9.997 ms
Display size	= 11.852 us	Display size	= 9.387 ms
Rear porch	= 2.370 us	Rear porch	= 0.548 ms
Sync width	= 0.948 us	Sync width	= 0.047 ms
Sync.polarity	= +	Sync.polarity	= +

TABLE 18: 49.714KHz/74.534 Hz, 832 X 624, pixel=57.27MHz

Horizontal		Vertical	
Frame border	= 0	Frame border	= 0
Total size	= 20.115 us	Total size	= 13.417 ms
Display size	= 14.528 us	Display size	= 12.552 ms
Rear porch	= 3.911 us	Rear porch	= 0.784 ms
Sync width	= 1.118 us	Sync width	= 0.060 ms
Sync.polarity	= -	Sync.polarity	= -

TABLE 19: 48.363 KHz/60.004 Hz, 1024 X 768, pixel=65MHz

Horizontal		Vertical	
Frame border	= 0	Frame border	= 0
Total size	= 20.677 us	Total size	= 16.666 ms
Display size	= 15.754 us	Display size	= 15.880 ms
Rear porch	= 2.462 us	Rear porch	= 0.600 ms
Sync width	= 2.092 us	Sync width	= 0.124 ms
Sync.polarity	= -	Sync.polarity	= -

TABLE 20: 56.476KHz/70.069 Hz, 1024 X 768, pixel=75MHz

Horizontal		Vertical	
Frame border	= 0	Frame border	= 0
Total size	= 17.707 us	Total size	= 14.272 ms
Display size	= 13.653 us	Display size	= 13.599 ms
Rear porch	= 1.920 us	Rear porch	= 0.513 ms
Sync width	= 1.813 us	Sync width	= 0.106 ms
Sync.polarity	= -	Sync.polarity	=

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TABLE 17: 63.92KHz/100 Hz, 800 X 600, pixel=67.5MHz

Horizontal			Vertical		
Frame border	=	0	Frame border	=	0
Total size	=	15.644 us	Total size	=	9.997 ms
Display size	=	11.852 us	Display size	=	9.387 ms
Rear porch	=	2.370 us	Rear porch	=	0.548 ms
Sync width	=	0.948 us	Sync width	=	0.047 ms
Sync.polarity	=	+	Sync.polarity	=	+

TABLE 18: 49.714KHz/74.534 Hz, 832 X 624, pixel=57.27MHz

Horizontal			Vertical		
Frame border	=	0	Frame border	=	0
Total size	=	20.115 us	Total size	=	13.417 ms
Display size	=	14.528 us	Display size	=	12.552 ms
Rear porch	=	3.911 us	Rear porch	=	0.784 ms
Sync width	=	1.118 us	Sync width	=	0.060 ms
Sync.polarity	=	-	Sync.polarity	=	-

TABLE 19: 48.363 KHz/60.004 Hz, 1024 X 768, pixel=65MHz

Horizontal			Vertical		
Frame border	=	0	Frame border	=	0
Total size	=	20.677 us	Total size	=	16.666 ms
Display size	=	15.754 us	Display size	=	15.880 ms
Rear porch	=	2.462 us	Rear porch	=	0.600 ms
Sync width	=	2.092 us	Sync width	=	0.124 ms
Sync.polarity	=	-	Sync.polarity	=	-

TABLE 20: 56.476KHz/70.069 Hz, 1024 X 768, pixel=75MHz

Horizontal			Vertical		
Frame border	=	0	Frame border	=	0
Total size	=	17.707 us	Total size	=	14.272 ms
Display size	=	13.653 us	Display size	=	13.599 ms
Rear porch	=	1.920 us	Rear porch	=	0.513 ms
Sync width	=	1.813 us	Sync width	=	0.106 ms
Sync.polarity	=	-	Sync.polarity	=	

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TABLE 21: 67.5 KHz/75Hz, 1152 X 864, pixel=108MHz

Horizontal		Vertical	
Frame border	= 0	Frame border	= 0
Total size	= 14.815 us	Total size	= 13.333 ms
Display size	= 10.667 us	Display size	= 12.8 ms
Rear porch	= 2.370 us	Rear porch	= 0.474 ms
Sync width	= 1.185 us	Sync width	= 0.044 ms
Sync.polarity	= +	Sync.polarity	= +

TABLE 22: 60 KHz/60 Hz, 1280 X 960, pixel=108MHz

Horizontal		Vertical	
Frame border	= 0	Frame border	= 0
Total size	= 16.667 us	Total size	= 16.667 ms
Display size	= 11.852 us	Display size	= 16.000 ms
Rear porch	= 2.889 us	Rear porch	= 0.600 ms
Sync width	= 1.037 us	Sync width	= 0.050 ms
Sync.polarity	= +	Sync.polarity	= +

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GENERAL PRODUCT SPECIFICATION

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3.2.1 Horizontal scanning

Scanning frequency : 30 - 70 KHz
H-shift range : ± 10 mm Min. (for preset modes only)

3.2.2 Vertical scanning

Scanning frequency : 50 - 160 Hz
V-shift range : ± 10 mm min. (for preset modes only)

3.3 Power supply

The display device maintains the specified performance in the range described as bellows :

Type	Mains current	Mains Voltage	Mains freq.
Universal	1.5A Max.	90 - 264 VAC	47 - 63 Hz
230V version	0.7A Max.	195 - 264 VAC	47 - 63 Hz
115V version	1.5A Max.	90 - 132 VAC	60 ± 3 Hz

Power consumption : 90 Watts Max.
Power cord length : 1.5M
Power cord type : 3 leads plug power cord with protective earth plug or IBM Hooded

3.4 Power saving management system

Mode	Signal H-Sync	Signal V-Sync	Signal Video	Compliance Requirement	Power	Recovery Time
On	Active	Active	Active	Mandatory	90w	N/A
Stand-by	Inactive	Active	Blanked	Mandatory	10w	3 sec.
Suspend	Active	Inactive	Blanked	Mandatory	10w	3 sec.
Off	Inactive	Inactive	Blanked	Mandatory	3w	Normal

Remark: Transition time from "ON" to any power saving mode will have 5 seconds delay.

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3.5 CRT Description

This display unit employs a high resolution CRT complying with the following specifications :

Dimensions	: 17 inches. flat/square screen
Pitch	: 0.27mm dotted with black matrix
Deflection angle	: 90 degrees
Light transmission	: 47% (dark glass)
Face treatment	: Anti-glare, anti-static
Implosion protection	: By P-Mini-rim-band.
EHT	: 25.0 ± 1 KV (Ib=0)
Visible screen area	: 327.2 mm x 245.44mm
CRT Source	: PHILIPS, CPT tube

3.6 RGB Amplifier

3.6.1 Video amplifiers

Dot Rate	: 110 MHz
Over / undershoot	: 10% Max. (Transient response)
Sag	: 5% Max.(pulses of 0.70H)
Black level shift	: 5% Max.

3.6.2 Brightness and Contrast

Reference mode 68.7 KHZ/85 HZ full white pattern.

DISPLAY LIGHT OUTPUT

Brightness	Contrast	Light output (full white)
Minimum	Minimum	No visible
Center	Maximum	30 ± 5 FL.

50mmx50mm block

Brightness at center and contrast at maximum light output is 41+/-6 FL.

3.6.3 Raster light output

Apply 68.7KHz/85Hz mode with no video pattern,
set brightness at center click and contrast control at minimum
The light output on the screen center should < 0.2FL.

3.7 Variation of image size (For preset modes only)

Due to brightness change : 2.0 % max at 31,5Khz, 37.5Khz
1.0 % max at timing > 37.5 Khz
(Set brightness control at center click, turn contrast control from Min. to Max.)
Due to aging
(25 C, 300 hrs) : 1.0 %

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Due to mains voltage variation (10%) : ≤ 1.0 %

3.8 Degaussing

An automatic degaussing circuit is provided which requires no intervention. The degaussing activated at the time of switch on or switch on again after switching off degaussing circuits for longer than 30 minutes.

3.9 Phosphor protection

The display device is sufficiently protected against the burning of phosphors in case of repetitive power cycling or absence of horizontal deflection.

3.10 Low emission requirements (MPR-II)

Items	Band I ELF (rms)	Band II VLF (rms)
Alternating Electric Field	MPR-II < 25 V/M	MPR-II < 2.5V/M
Magnetic Field	MPR-II < 250 nT	MPR-II < 25 nT
Electrostatic Potential	< +/- 500 V	

Band I : 5 to 2K HZ.
Band II : 2K to 400K HZ.
Test procedure according to MPR-II and E.S.P. test method.

3.11 Display data channel : DDC1/2B (VESA STANDARD)

The DDC HEX Data (refer sheet 190) should be written into the DDC IC and MCU EEPROM.

4.0 Display image (CRT facing east)

The monitor is aligned in a magnetic cage having the following magnetic field components :
Northern Hemisphere : H = 0, V = 450 mG, Z = 0
Southern Hemisphere : H = 0, V = -500 mG, Z = 0

Conditions for visual testing, unless otherwise stated:
Input video signal - 700 mVpp cross hatch
Brightness control - center position
Contrast control - maximum position

4.1 Display resolutions

See 3.1.3

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4.2 Image size (For preset modes only)

The dimensions of guaranteed display area to be measured along the picture center of horizontal and vertical axis of the screen as listed below: (preset modes only, refer to fig. 1)

Width : 270 ± 3 mm
Height : 202 ± 3 mm

4.3 Image centering deviation (For preset modes only)

With respect to fig. 2, the target relationships are the following :

$|A - B| \leq 5$ mm $|C - D| \leq 5$ mm

Note : This centering is adjustable by the end-user.

4.4 Picture shift control range (For preset modes only)

H-shift range : 10 mm min.
V-shift range : 10 mm min.

4.5 Picture tilt

With respect to Fig. 3, Tilt to be measured on extremes of center line from bezel.

$|A - B|$: $\leq$ 2 mm

4.6 Geometrical distortions (For preset modes only)

It is acceptable that pincushion, trapezoid, rhomboid, rotation and various waves distortions must remain within the limits of tolerance as in fig. 4,
where A = B = 2.0 mm.
C = D = 2.0 mm.
The waviness of any vertical or horizontal shall be less than 1.0 mm over a 50 mm distance.

4.7 Image non-linearity pattern with
12 equal blocks along horizontal axis,
10 equal blocks along vertical axis. (see Fig. 1) (For preset modes only)

Overall : 10 % (each horizontal and vertical)

Deviation of Two adjacent block : $\leq$ 6 %

H. non-linearity =(X. Max. - X. Min.) / (X. Max.) x 100%

V. non-linearity =(Y. Max. - Y. Min.) / (Y. Max.) x 100%

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4.8 Mis-convergence

The maximum convergence error to be measured on a white spot or white display line to represents the maximum distance between the energy centers of any two primary colors. (See Fig. 6)

CONVERGENCE SPEC.

Zones	0.28 mm CRT
Zone C	0.15 mm
Zone A	0.25 mm
Zone B	0.35 mm

4.9 Focus check (68.7 KHZ / 85 HZ)

Adjust brightness control to center click and contrast control to get 25 FL at full white pattern , then generate "@" characters to cover entire of the picture the characters should be clearly identified in all display area. (See Fig. 7)

4.10 Luminance uniformity

condition : With full white pattern, set contrast control at maximum position and brightness control at center click position.

The center of the display is 30 FL+/-5. , the Max. deviation of the screen should not exceed 25% .

4.11 White color adjustment

Based on the 1931 CIE chromatic diagram (x,y) coordinates of white display on screen center should be:

For 9300° K X = 0.283 +/- 0.015
Y = 0.297 +/- 0.015
For 6500° K X = 0.313 +/- 0.015
Y = 0.329 +/- 0.015

Check conditions :

Set brightness control at center click position and contrast at maximum position.

4.12 Color tracking on full white pattern

To adjust the luminance output from 3 to 30 FL. By turning the contrast control (brightness control at center click position), the color co-ordinates should not deviate more than the following tolerance when compare to display center:

X= X (center) +/- 0.015
Y= Y (center) +/- 0.015

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4.13 Purity

Test patterns : Full white / Red / Green / Blue.
Conditions : As stated in item 4.0, the purity must be checked under specific destinations of earth magnetic environments and the monitor to be well degaussed.

After warming-up time of 30 min. , no color stains may occur in above four patterns.

4.14 Moire'e

Condition: Displaying a full white pattern, at any preset mode , the display size to be set as Fig.1
The clouding effect must not rise to disturbing levels in 1/3 of the screen with luminance setting from 15 to 30 FL.

4.15 Blemish
Blemish shall be in accordance with CRT specification.

5.0 Mechanical characteristics

5.1 User controls
- Power ON/OFF switch
- 5 Key digital user control

5.2 Connectors and cables

5.2.1 Power cord type : 3 leads plugable power cord with protective earthed plug or IBM Hooded

Length : 1.5 m +/- 50 mm (exc. connector)
Safety requirements : See following.

	Approval		
Countries	Mains plug	Wire	Connector
Germany	VDE	VDE	VDE
Switzerland	--	SVE	SVE
Belgium	CEBEC	--	--
Sweden	SEMKO	SEMKO	SEMKO
Finland	EI	--	EI
Norway	NEMKO	NEMKO	--
Denmark	DEMKO	DEMKO	DEMKO
Italy	OVE	--	OVE
Netherlands	KEMA	KEMA	KEMA
U.K.	ASTA	HAR	ASTA
U.S.A.	UL	UL	UL
Canada	CSA	CSA	CSA
Australia	SAA	SAA	SAA

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5.2.2 Signal cable

Length of video : 1.5 m 50 mm flying with 15 pin PS/2 D-shell socket

5.3 Tilt and swivel base

Tilt angle : 5 forward and 15 Max. backward

Swivel rotation : 90 leftward or rightward

6.0 Environmental characteristics

The following sections to define the interference and susceptibility condition limits that might occur between external environment and the display device.

6.1 Susceptibility of display to external environment

6.1.1 (A) Operating limits

Temperature : 0 C to 40 C Humidity : 10 to 90% (W/O condensation)

Air pressure : 700 ~ 1100 mbar

(B) Non-operating limits (storage)

Temperature : -25 C to 60 C

Humidity : 5 to 95 % (W/O condensation)

Altitude : 300 to 1100 mbar

6.1.2 Transportation packages

A) Carton box

A-1 Size (with pedestal)

496(W) x 518(D) x 495(H)

A-2 Carton paper : double wall AB fute corrugate board, color brown

Bursting : 19.3 kg/cm2 min

Compression : 600 kg min

B) Transportation conditions

B-1 Container loading (separated pedestal)

Q'ty	Container size			
	40'		20'	
	W/ palette		W/ palette	
	Yes	No	Yes	No
Layers	4	4	4	4
Sets per layer	4	4	4	4
Sets per block	16	16	16	16
Blocks per container	24	24	10	10
Total sets	384	384	160	160

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B-2 Transportation standards

Standards		EU / Asia versions PHILIPS's UN-D1400	U.S.A. version NSTA
Drop test	Height	61 cm	61 cm
	Sequence	-10 °C for 16 hours, 1 corner, 3 faces Right/Back/Top faces Left/Front/Bottom faces (only for reference)	1 corner. 3 edges. 6 faces
	Result	- Electrical function OK. - Mechanical function OK. - No serious damage in Set.	
Vibration Test	Sequence	a . 5~200Hz. 0.25G operating random vibration 30 min/axis, 3 axes b. 5~200Hz. 0.73 packing random - vibration 30 min/axis, 3 axes	
	Result	- Electrical function OK. - Mechanical function OK. - No serious damage in set.	
Shock test	For design evaluation only. Half sine shock : 120G, <3m sec. 6 shocks Temp. : 23 °C Humidity : 60 % Air pressure : 100 kpa Standard : Mechanical Guideline		

6.2 Display disturbances from external environment

6.2.1 ESD Disturbances
According to EN50082-1 (also refer to IEC801-2 for detail).

6.3 Display disturbances to external environment

The disturbances induced by the display and tolerated by the environment are defined as follows :

6.3.1 Ionizetic radiation
Completely fulfilled International Commission of Radio logical Protection (ICRP) requirement 0.5 mR/Hr.

Actually the set can reach 0.1 mR/Hr.

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6.3.2 EMI
Can comply with FCC part 15, DOC C108.8 and EN55022

7.0 Safety tests

7.1 Dielectric strength (Hi-pot test)
According to IEC950, UL1950 and CSA 22.2 No 950

7.2 Resistance for protective earthing
According to IEC950

7.3 Leakage current
According to IEC950, UL1950 and CSA22.2 No. 950

7.4 Grounding
According to IEC950, UL1950 and CSA22.2 No. 950

8.0 Certifications

8.1 Safety
The monitors comply with the following safety standards:

- IEC950
- UL1950
- DHHS 21 CFR, subchapter J
- CSA-22.2 NO. 950
- GERMANY ZH1/618(GS), ISO 9241-3,-8

8.2 EMI (Electromagnetic Interference)
The monitor comply with the following EMI standards :

- En55022
- FCC Part 15
- DOC C108.8

8.3 Fulfil approbation requirements
Destination basis, set can fulfil following requirements:

Countries	Safety	EMI
Germany	TUV,GS	CE
Sweden	SEMKO	----
Norway	NEMKO	----
Denmark	DEMKO	----
Finland	FIMKO	----
Spain	HOMOLOGATION	CE
UK	BEAB	CE
U.S.A.	UL , DHHS	FCC
Canada	CSA	DOC
Japan	----	VCCI

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9.0 Reliability

9.1 Mean time between failures
MTBF to be calculated according to Military standard
MIL-HDBK-217C.

MTBF 75,000 Hours (Excluding CRT)

$$\text{PRACTICE of MTBF} = \frac{\text{TOTAL HRS (POWER ON) X TOTAL SETS}}{\text{NBR. OF FAILURE SETS}}$$

10.0 Quality assurance requirements

10.1 Acceptance test

According to MIL-STD-105D level II,
AQL : 0.4 (Major)
: 1.0 (Minor)

Customer acceptance : UAW 0377/40
Criteria

11.0 Service ability

The service ability of this monitor should fulfil the requirements which are prescribed in UAW-0346 and must be checked with the check list UAT - 0361

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GENERAL PRODUCT SPECIFICATION

PHILIPS

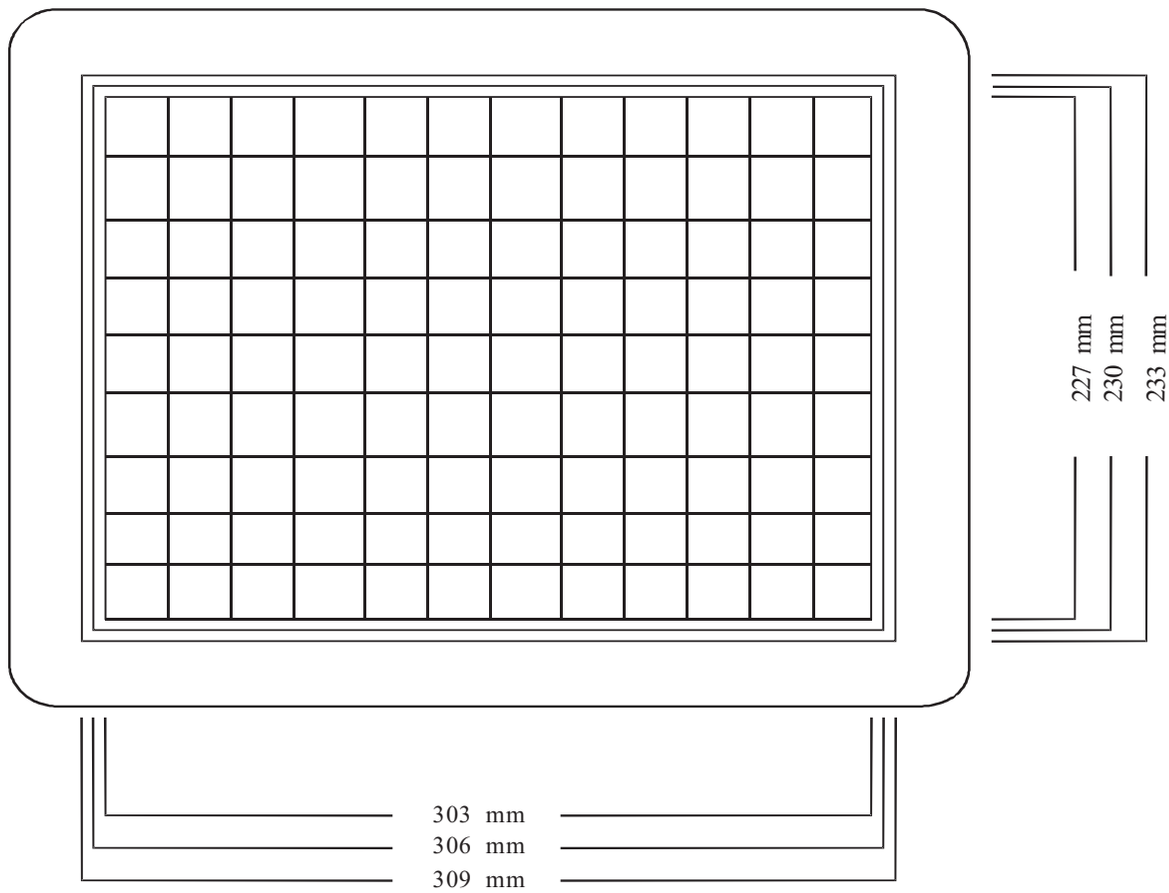

FIG-1 IMAGE DIMENSION

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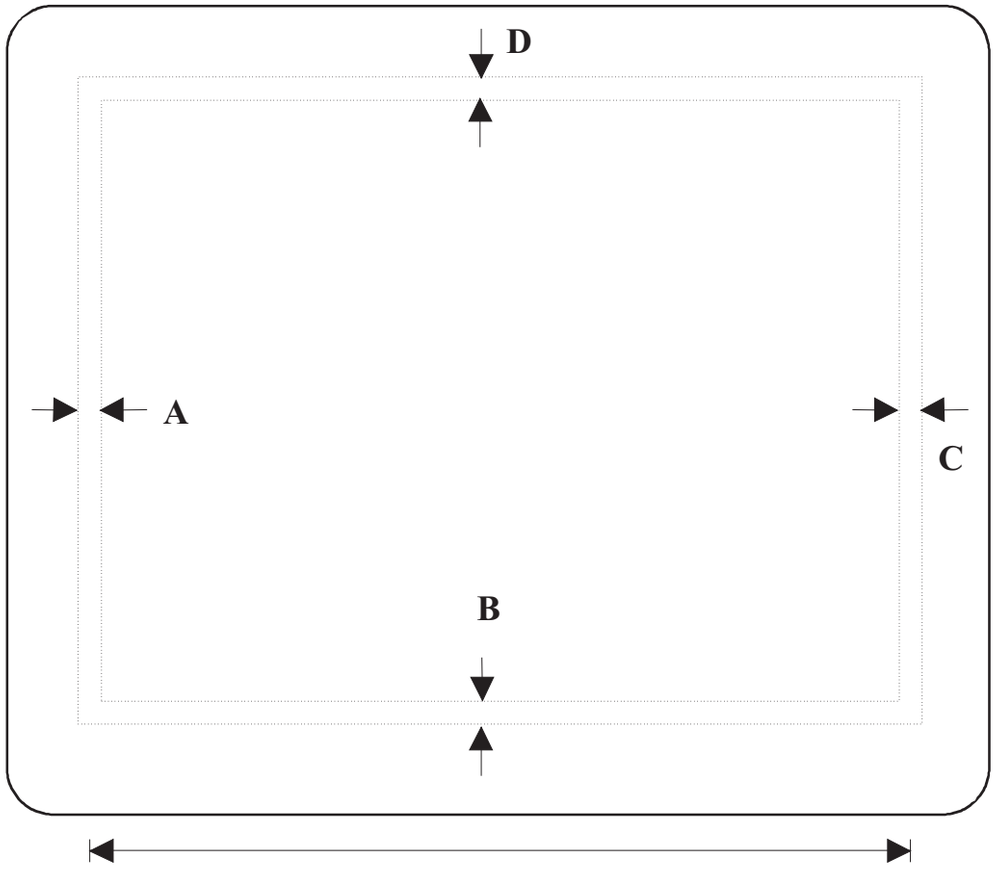
CLASS NO.	17" CM 23-- GS3 CMTR TYPE : 107S21/97C (COCA+) BRAND : PHIILIPS (71K)	8639 000 10743
00-06-07		

NAME K.J.LIU	SUPERS.	29	590 — 23	10	A4
TY CHECK	DATE 00-06-07	Property of PHILIPS ELECTRONICS INDUSTRIES (TAIWAN) LTD.-B.E.			

2838 100 05424

PHILIPS



A=B=C=D ≤ 2.0 mm

FIG-4 IMAGE GEOMETRY

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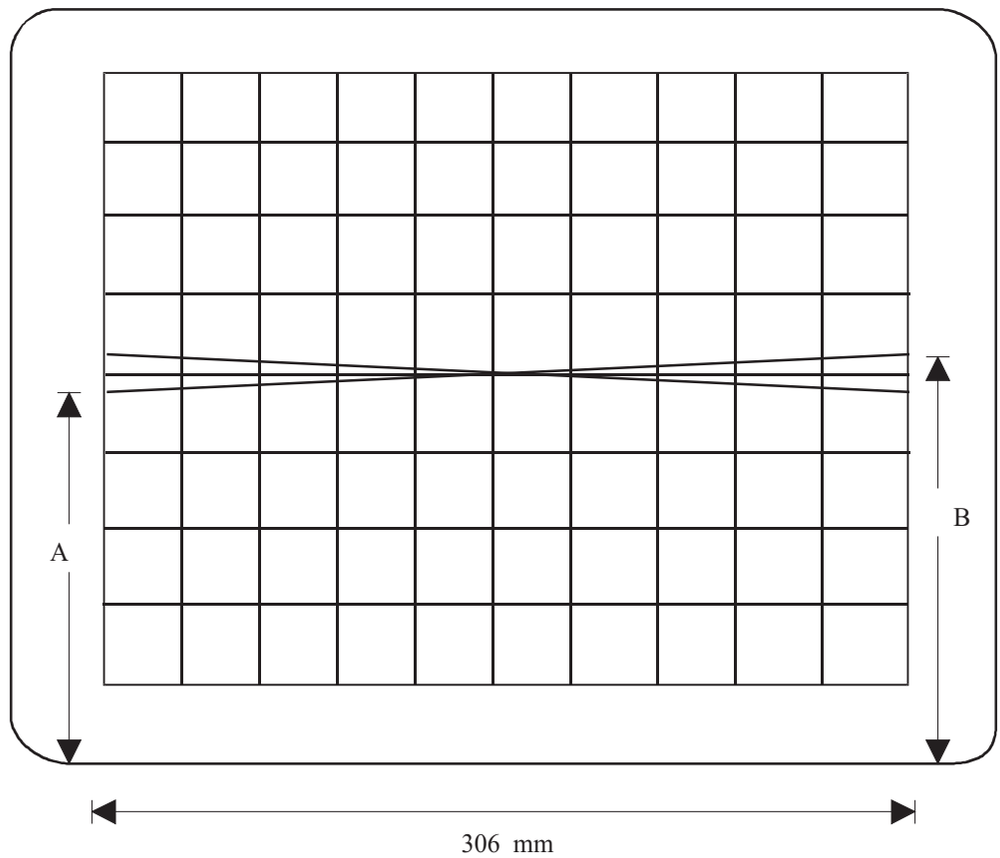
CLASS NO.	17" CM 23-- GS3 CMTR TYPE : 107S21/97C (COCA+) BRAND : PHIILIPS (71K)	8639 000 10743
00-06-07		

NAME K.J.LIU	SUPERS.	29	590 — 24	10	A4
TY	CHECK	DATE 00-06-07	Property of PHILIPS ELECTRONICS INDUSTRIES (TAIWAN) LTD.-B.E.		

2838 100 05424

GENERAL PRODUCT SPECIFICATION



$$|A-B| \leq 2 \text{ mm}$$

FIG-3 IMAGE ROTATION

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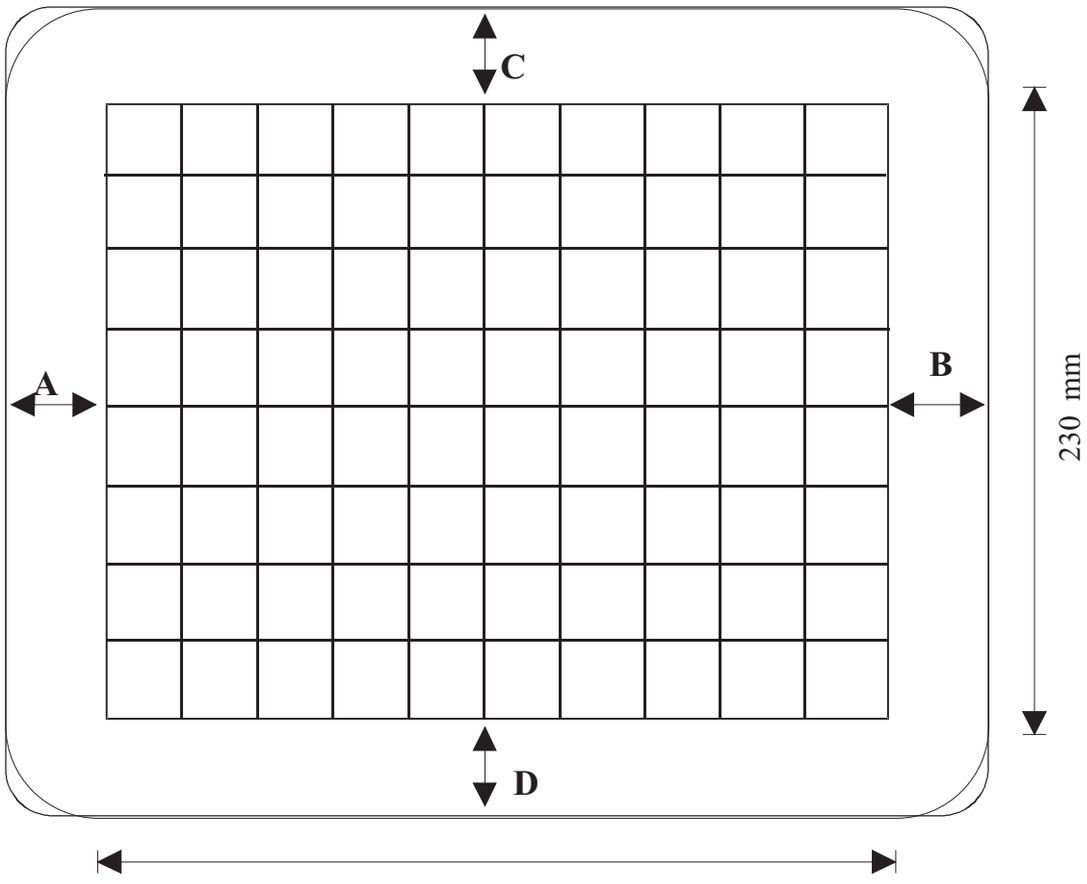
CLASS NO.	17" CM 23-- GS3 CMTR TYPE : 107S21/97C (COCA+) BRAND : PHIILIPS (71K)	8639 000 10743
00-06-07		

NAME K.J.LIU	SUPERS.	29	590 — 25	10		A4
TY / CHECK	DATE 00-06-07	Property of PHILIPS ELECTRONICS INDUSTRIES (TAIWAN) LTD.-B.E.				

2838 100 05424

PHILIPS



|A-B| AND |C-D| ≤ 5 mm

FIG-2 IMAGE CENTERING

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CLASS NO.	17" CM 23-- GS3 CMTR TYPE : 107S21/97C (COCA+) BRAND : PHIILIPS (71K)	8639 000 10743
00-06-07		

NAME K.J.LIU	SUPERS.	29	590 — 26	10		A4
TY	CHECK	DATE 00-06-07	Property of PHILIPS ELECTRONICS INDUSTRIES (TAIWAN) LTD.-B.E.			

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GENERAL PRODUCT SPECIFICATION

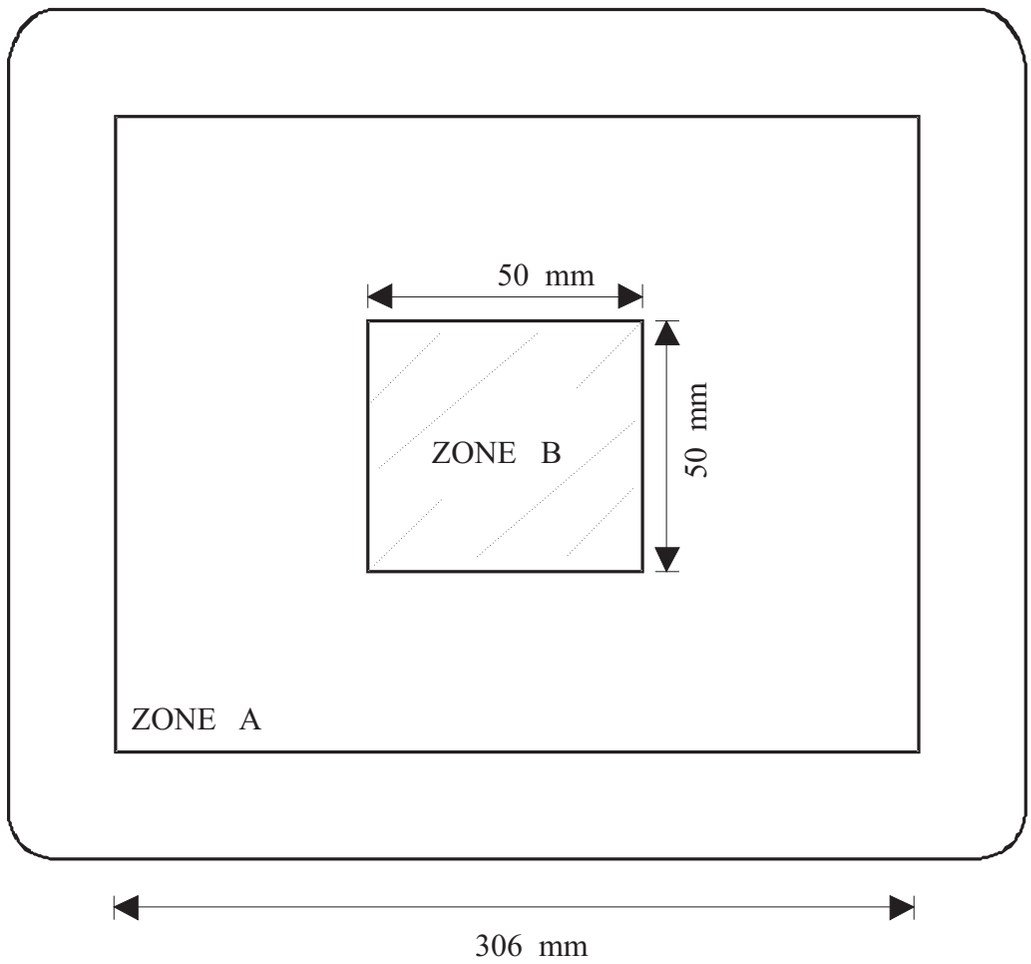

FIG-5 CONTRAST AND BRIGHTNESS MEASUREMENT AREA

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CLASS NO.	17" CM 23-- GS3 CMTR TYPE : 107S21/97C (COCA+) BRAND : PHIILIPS (71K)			8639 000 10743				
00-06-07								
NAME K.J.LIU	SUPERS.	29	590 — 27	10		A4		
TY / CHECK	DATE 00-06-07	Property of PHILIPS ELECTRONICS INDUSTRIES (TAIWAN) LTD.-B.E.						

2838 100 05424

PHILIPS

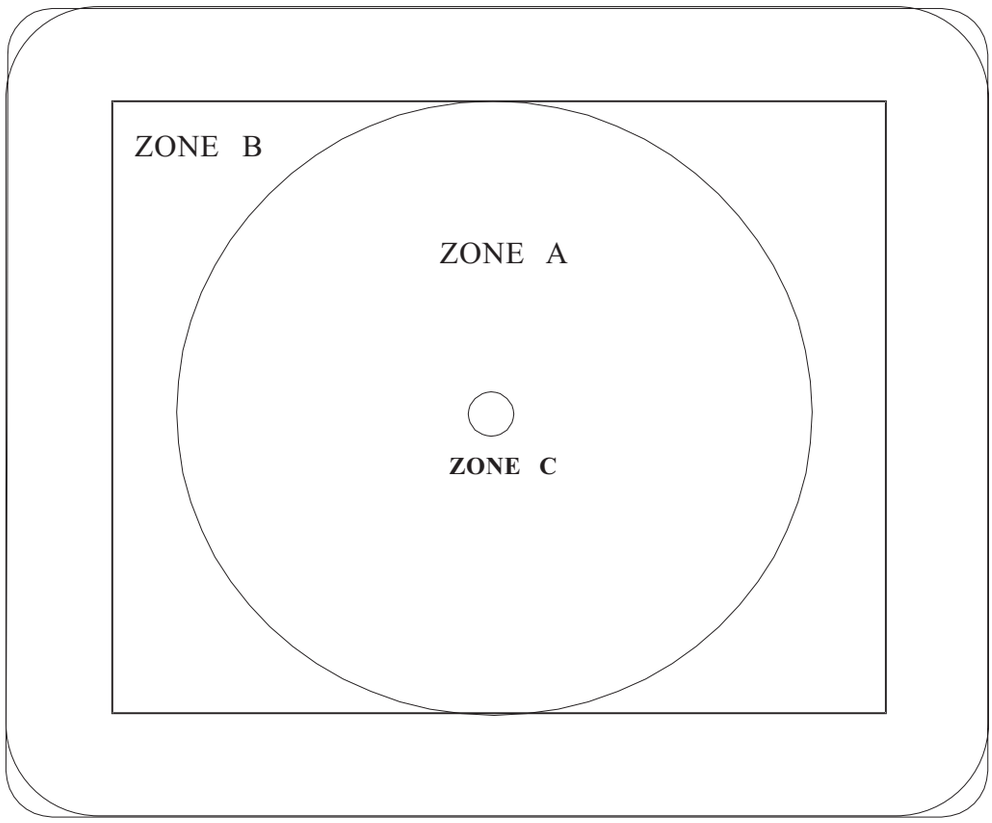

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FIG-6 MISCONVERGENCE

CLASS NO.	17" CM 23-- GS3 CMTR TYPE : 107S21/97C (COCA+) BRAND : PHIILIPS (71K)			8639 000 10743					
00-06-07									
NAME K.J.LIU	SUPERS.		29	590 — 28		10		A4	
TY	CHECK	DATE 00-06-07	Property of PHILIPS ELECTRONICS INDUSTRIES (TAIWAN) LTD.-B.E.						

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GENERAL PRODUCT SPECIFICATION

PHILIPS

1 BYTE = 8BITS

LINE	HEX.DATA	
0	0	0
1	0	0
2	7	C
3	8	2
4	8	2
5	9	E
6	9	2
7	9	2
8	9	C
9	8	0
A	7	C
B	0	0
C	0	0
D	0	0
E	0	0
F	0	0

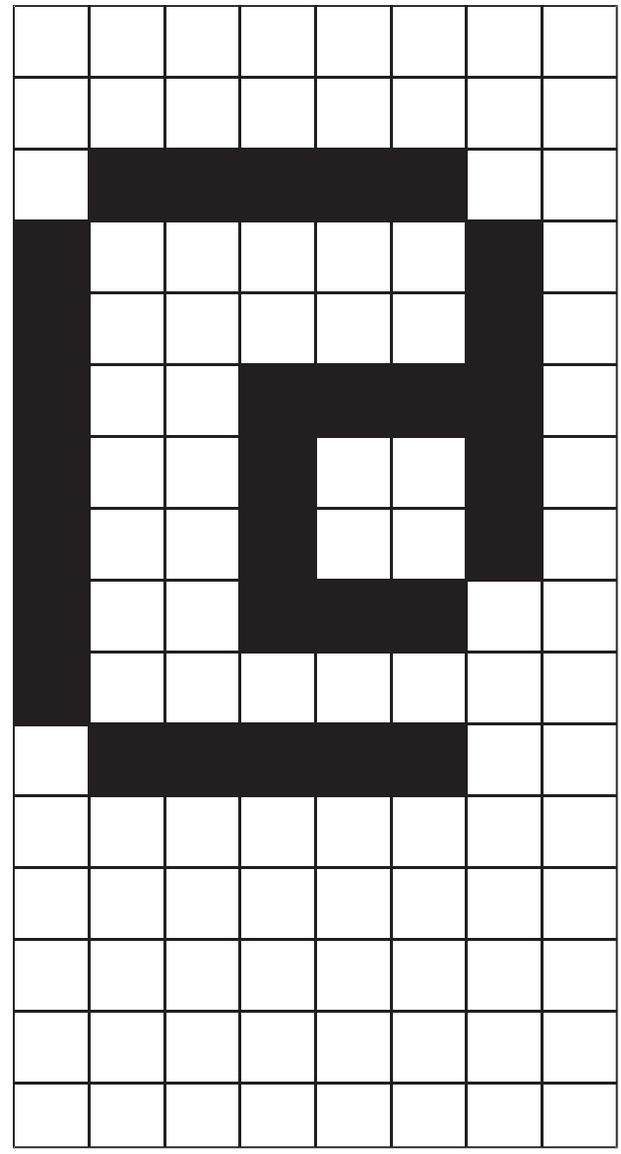

Fig 7 CHARACTER FORMAT FOR FOCUS CHECK

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CLASS NO.	17" CM 23-- GS3 CMTR TYPE : 107S21/97C (COCA+) BRAND : PHIILIPS (71K)	8639 000 10743
00-06-07		

NAME K.J.LIU	SUPERS.	29	590 — 29	10	A4
TY CHECK	DATE 00-06-07	Property of PHILIPS ELECTRONICS INDUSTRIES (TAIWAN) LTD.-B.E.			

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LightFrame™ for Windows

Introduction

Philips LightFrame™ feature enriches the experience of pictures and video on a Philips CRT (picture tube) monitor. This highlighting is done by boosting the brightness and sharpness on a selected region of the monitor screen. Since high brightness and sharpness are not preferred for most standard Windows applications, this special feature will only be active in certain circumstances. So that you can control these circumstances, a special program and icons will be installed in your Windows operating systems.

Notes

Philips LightFrame™ will only work with monitors that have been built to use this software. Earlier Philips monitors or other manufacturers monitors will not work with this special software. It is recommended that you install this software only on a Philips monitor designed to use it. These monitors can be identified by the LightFrame™ logo on the front of the monitor.

This software is not designed for use with LCD flat screen monitors.

LightFrame™ will work with true Windows-based programs and DOS -based programs that operate in a Window s environment. It will not work with DOS-based programs operating only in a DOS environment.

Definitions

The following list contains definitions for frequently used words.

Highlighted window: The selected window on which LightFrame™ is active.

Highlighted area: The selected rectangle (area) on which LightFrame™ is active.

Compatibility

This version of LightFrame™ is compatible with
Windows 95
Windows 98
Windows NT
Windows 2000 Professional Edition.

Language Selection

While English is the default language of LightFrame™ , the User Interface can be set up to operate in Dutch, French, German, Italian, Portuguese, or Spanish.

Installation

1) To install LightFrame™ , place the CD in the CD-ROM drive.
2) Next, when the menu of items on the CD appears on your screen, click on 'Install LightFrame™ '.
3) Now, follow the on-screen prompts to properly install the program. The software checks to see if you have a compatible monitor. You must say yes to the license agreement for the software to install.
4) After installation, LightFrame™ automatically loads and the icon appears in the task bar.

Notes

LightFrame™ is installed in the Start menu, under Programs. Unless otherwise selected during installation, LightFrame™ is installed in C:\Program Files\Philips\LightFrame. A shortcut is installed in the Start Up folder and on the desktop. (If needed, LightFrame™ can be operated manually from the Start Up folder.)

If LightFrame detects that your monitor is not LightFrame™ compatible, an message appears on the monitor screen. See Error Message number 1 under the heading Error Messages. If you see this message, you can select to abort or continue the installation. However, if you continue the installation, LightFrame™ will probably not work on the monitor.

Uninstall

ShouldLightFrame™ you need to remove the Light Frame software, please follow

these steps.

1) First, click on the Start Menu.
2) Next, highlight Settings.
3) Then, click on Control Panel.
4) Now, click on Add/Remove Programs
5) Finally, select Light Frame from the list and then click on the Add/Remove button.

Operating LightFrame™

After installation, Light Frame starts up automatically whenever the computer is started. At system start up, LightFrame™ checks the selected resolution of the monitor and if the monitor is Light Frame™ capable.

Icon and Colors

An icon of a monitor represents LightFrame™ on your desktop. This icon appears as a shortcut on the Windows desktop. Light Frame has three (3) modes of operation: Active, Inactive, and Suspended. The same icon with a different color in its center represents each mode

Active = The LightFrame™™ icon has bright green center.

Inactive = The icon has a gray center.

Suspended = The icon has a yellow center with a red cross.

Notes

An active window must be 100% visible, i.e. it must be on top of all other windows or areas. If any part of another window or area overlaps a highlighted window, LightFrame™ automatically suspends operation. That means the icon goes from a green center to a yellow on with a red cross and the feature ceases. Once that window or area is removed and the original highlighted window is on top again, LightFrame™ automatically re-engages and the icon regains its bright green center.

An active window must also be 100% on the monitors viewing area. If part of a highlighted window moves off the monitors viewing area, Light Frame automatically goes into the Suspended mode. If part of a window is off the viewing area, you will not be able to use LightFrame™ on that window.

Only one window or area at a time can be highlighted.

How To Activate LightFrame™

1) Click on the Light Frame icon in the systematization (the area to the far right in the task bar). . The icon will turn from gray to a green center.
2) Guide the mouse to the window you want displayed. As you move the mouse, the cursor changes to a small arrow with a light bulb.

3a) Click on the window you want to have highlighted. The brightness and sharpness are automatically adjusted.

3b) If you want to highlight only an area of a window, click on the left mouse button and drag the cursor over the area to be highlighted while holding the mouse button. A rectangle forms around the area. When the area is encompassed by the rectangle, release the mouse button and the area becomes highlighted.

LightFrame™ for windows

Go to cover page

Right-Click Features

On the LightFrame™ icon in the task bar, click the right-side mouse button to bring up a menu from which you can select:

About... which tells you something about LightFrame™™™
Help which takes you to the Help screen where you can find additional information
Exit which exits the LightFrame™ Program.

If you select exit and the color in the center of the icon is green, it will turn gray and LightFrame™ is deactivated. If you select exit an Exit message appears asking you if are sure you want to exit. Select "Yes" to exit or "No" to abort the exit. If you select Yes, you can always restart LightFrame™ by clicking on the desktop shortcut icon.

LightFrame™ is Suspended When . . .

Screen saver, Sleep mode, Deep Sleep (Power Off) mode is activated
LightFrame™ goes into the Suspended mode as soon as a screen saver becomes active on your computer. This is true even though the monitor icon may still have a green center. LightFrame™ becomes active again as soon as the screen is reawakened and the screen saver quits.
The same is true when the computer goes into Sleep mode or Deep Sleep (Power Off) mode. LightFrame™ goes into Suspended mode and reawakens when the monitor is reawakened.

Screen or Area is Minimized
LightFrame™ suspends when a highlighted window is minimized. LightFrame™ reactivates when the highlighted window is again maximized or restored to its previous size.

Another Window or Area Overlaps Highlighted Window or Area
LightFrame™ suspends if a window that is not highlighted overlaps a highlighted window. LightFrame™ reactivates once the highlighted window is again on top.

Miscellaneous
Monitor Turned Off

If the monitor is hard powered off while a window or area is highlighted and then hard powered on again, LightFrame™ is no longer active. The icon may still show the feature as still active. In this case, you have to exit LightFrame™ and restart it via the icon on the desktop or the Start menu.

If the Monitor is Detached and Another Monitor is Attached

If the monitor is detached from the computer while a highlighted window or area is displayed and then another monitor is attached, the system will have to be re-booted so that Philips LightFrame™ can detect the monitors LightFrame™ capabilities and store the setup information about the new monitor. If the monitor is not LightFrame™ capable, an Error message appears. See Error Message 2 under the heading Error Messages. You can abort or continue the set up. However, if you continue, LightFrame™ may not work with the monitor.

Error Messages

You may see this message when you install LightFrame™ .

Error Message 1 dialog box here

LightFrame™ cannot detect a monitor which supports this feature. You can still proceed with the software installation but LightFrame™ might not run on your system.

You may see this message when you try to switch monitors.

Error Message 2 dialog box here

LightFrame™ cannot detect a monitor which supports this feature. You can still start the software but LightFrame™ may not work.

Go to cover page

TELEVISION/MONITOR SAFETY GUIDELINES FOR THE PROFESSIONAL SERVICE TECHNICIAN

Safety Checks

After the original swevice problem has been corrected,a complete safety check
should be made. Be sure to check over the entire set, not just the areas where you have worked. Some previous servicer may have left an unsafe condition,which could be unknowingly passed on to your customer. Be sure to check all of the following:

Fire and Shock H azard

1. Be sure all components are positioned in such a way as to avoid the possibility of adjacent component shorts. This is especially important on those chassis which are transported to and feom the service shop.
2. Never release a repaired unit unless all protective devices such as insulators, barries, covers, strain reliefs, and other hardware have been installed in accordance with the original design.
3. Soldering and wiring must be inspected to locate possible cold solder joints,solder splashes,sharp solder points, frayed leads, pinched leads, or damaged insulation (including the ac cord).Be certain to remove loose solder balls and all other loose foreign particles.
4. Check across-the-line components and other components for physical evidence of damage or deteriortion and replace if necessary. Follow original layout,lead length, and dress.
5. No lead or component should touch a receiving tube or a resistor rated at 1 watt or more. Lead tension around protruding metal surfaces or edges must be avoided.
6. Critical components having special safety characteristics are identified with ans bythe Ref. No. in the parts list and enclosed within a broken line * (where seceral criticalcomponents are grouped in one area) along with the safety symbols on the schematic diagrams and/or exploded views.
7. When servicing any unit, always use a seoparate isolation transformer for the chassis Failure to use a separate isolation transformer may exopose you to possible shock hazard, and may cause damage to servicing instruments.
8. Many electronic products use a polarized ac line cord (one wide pin on the plug.) Defeating this safety feature may create a potential hazard to the service and the user. Extension cords which do not incorporate the polarizing feature should never be used.
9. After reassembly of the unit, always perform an leakage test or resistance test from the line cord to all exposed metal parts of the cabinet. Also check all metal control shafts(with knobs removed), antenna terminals, handles, screws, etc. to be sure the unit may be safety operted without danger of electrical shock.

* Broken line

Implosion

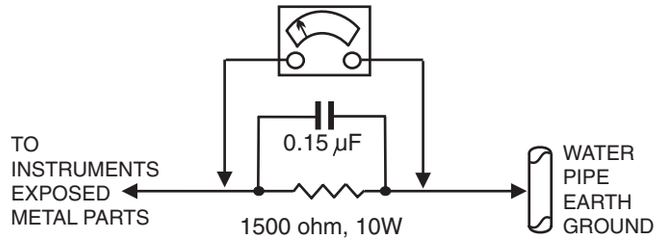
1. All picture tubes used in current model receivers are equipped with an intergral implosion system. Care should always be used, and safety glassesworn,whenever handling any picture tube. Avoid scratching or other rwise damaging the picture tube during installation.
2. Use only replacement tubes specified by the manufacturer.

X-radiation

1. Be sure procedures and instructions to all your service personnel cover the subject of X-radiation. Potential sources of X-rays in TV receivers are the picture tube and the high voltage circuits. The basic precaution which must be exercised is to keep the high voltage at the factory recommended level.
2. To avoid possible exposure to X-radiation and electrical shock, only the manufacturer's specified anode connectors must be used.
3. It is essential that the service technician has an accurate HV meter available at all times. The calibration of this meter should be checked periodically against a reference standard.
4. When the HV circuitry isoperating properly there is no possibility of an x-radiation problem. High voltage should always be kept at the anufacture,s rated value-no higher - for optimum performance. Every time a color set is serviced, the brightness should be run up and down while monitoring the HV with a meter to be certain that the HV is requlated correctlv and does not exceed the specified value. We suggest that you and your technicians review test procedures so that HV requation are always checked as a standard servicing procedure, and the reason for this prudent routine is cleary understood by everyone. It is important to use an accurate and reliable HV meter. It is recommended that the HV recorded on each customer's invoice, which will demonstrate a proper concern for the customer's safety.
5. When troubleshooting and making test measurements in a receiver with a problem of excessive high voltage, reduce the line voltage by means of a Variac to bring the HV into acceptable limits while troubleshooting. Do not operate the chassis longer than necessary to locate the cause of the excessive HV.
6. New picture tubes are specifically designed to withstand higher operathng voltages without creating undesirable X-radiation. It is strongly recommended that any shop test fixture which is to be used with the new higher voltage chassis be equipped with one of the new type tubes designed for this service.Addition of a permanently connected HV meter to the shop test fixture is advisable. The CRT types used in these new sets should never be replaced with any other types,as this may result in excessive X-radiation.
7. It is essential to use the specified picture tube to avoid a possible X-diation problem.
8. Most TV receivers contain some type of emergency "Hold Down" circuit to pervent HV from rising to excessive levels in the presence of a failure mode. These various circuits should be understood by all technicians servicing them, especially since many hold down circuits are inoperative as long as the receiver performs normally.

Leakage Current Cold Check

1. Unplug the ac line cord and connect a jumper between the two prongs of the plug.
2. Turn on the power switch.
3. Measure the resistance value between the jumpered ac plug and all exposed cabinet parts of the receiver, such as screw heads, antennas, and control shafts.When the exposed metallic part has a return path to the chassis, the reading should be between 1 megohm and 5.2 megohms. When the exposed metal does not have a return path to thr chassis, the reading must be infinity.Remove the jumper from the ac line cord.



Leakage Current Hot Check

1. Do not use an isolation transformer for this test. Plug the completely reassembled receiver directly into the ac outlet.
2. Connect a 1.5k, 10w resistor paralleled by a 0.15uf. capacitor between each exposed metallic cabinet part and a good earth ground such as a water pipe, as shown above.
3. Use an ac voltmeter with at least 5000 ohmsy volt sensitivity to measure the potential across the resistor.
4. The potential at any point should not exceed 0.75 volts. A leakage current tester may be used to make this test; leakage current must not exceed 0.5 milliamps. If a measutement is outside of the specified limits, there is a possibility of shock hazard. The receiver should be repaired and rechecked before retutning it to the customer.
5. Repeat the above procedure with the ac plug reversed.(Note: An ac adapter is necessary when a polarized plug is used. Do not defeat the polarizing feature of the plug.)

Picture Tube Replacement

The primary source of X-radiation in this television receiver is the picture tube.The picturetube utilized in this chassis is specially constructed to limit X-radiation emissions. For continued X-radiation protection, the replacement tube must be the same type as the original, including suffix letter,or a Philips approved tupe.

Parts Replacement

Many electrical and mechanical parts in Philips television sets have special safety related charcteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. The use of a substitute part which does not have the same safety characteristics as the Philips recommended replacement part shown in this service manual may create shock, fire, or other hazards

WSRNING : Before removing the CRT anode cap, turn the unit **OFF** and short the HIGH VOLTAGE to the CRT DAG ground.
SERVICE NOTE : The CRT DAG is not at chassis ground.

IMPORTANT SAFETY NOTICE

Go to cover page

Proper service and repair is important to the safe, reliable operation of all PHILIPS Company** Equipment.
The service procedures recommended by PHILIPS and described in this service manual are effective methods of performing service operations. Some of these service operations require the use of tools specially designed for the purpose. The special tools should be used when and as recommended.

It is important to note that this manual contains various CAUTIONS and NOTICES which should be carefully Read in order to minimize the risk of personal injury to service personnel. The possibility exists that improper Service methods may damage the equipment. It also is important to understand that these CAUTIONS and NOTICES ARE NOT EXHAUSTIVE. PHILIPS could not possibly know, evaluate and advise the service trade of all conceivable ways in which service might be done or of the possible hazardous consequences of each way. Consequently, PHILIPS has not undertaken any such broad evaluation. Accordingly, a servicer who uses a service procedure or tool which is not recommended by PHILIPS must first satisfy himself thoroughly that neither his safety nor the safe operation of the equipment will be jeopardized by the service method selected.

** Hereafter throughout this manual, PHILIPS Company Will be referred to as PHILIPS.

WARNING

Critical components having special safety characteristics are identified with a ⚠ by the Ref. No. in the parts list and enclosed within a broken line* (where several critical components are grouped in one area) along with the safety symbol ⚠ on the schematics or exploded views.

Use of substitute replacement parts which do not have the same specified safety characteristics may create shock, fire, or other hazards.

Under no circumstances should the original design be modified or altered without written permission from PHILIPS. PHILIPS assumes no liability, express or implied, arising out of any unauthorized modification Of design.
Servicer assumes all liability.

*** Broken Line**

FOR PRODUCTS CONTAINING LASER :

DANGER- Invisible laser radiation when open. AVOID DIRECT EXPOSURE TO BEAM.

CAUTION- Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

CAUTION- The use of optical instruments with this product will increase eye hazard.

TO ENSURE THE CONTINUED RELIABILITY OF THIS PRODUCT, USE ONLY ORIGINAL MANUFACTURER'S REPLACEMENT PARTS, WHICH ARE LISTED WITH THEIR PART NUMBERS IN THE PARTS LIST SECTION OF THIS SERVICE MANUAL.

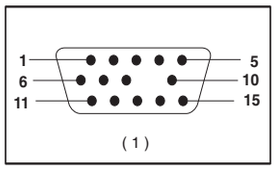
Technical Data

Technical Specification*

CRT

Size and deflection	:17 inch/41cm,90° defection angle
Dot pitch/Grille pitch	: 0.27mm
Horizontal pitch	: 0.24mm
Tube type	: Shadow mask,flat square, high contrast, antiglare, anti-static, anti-refleection, light transmission 47%
Phosphor	: P22
Recommended display area	: 12.0"x9.0"/306 x 230 mm
Maximum display area	: 12.9"x9.7"/327 x 245 mm
Scanning	
Horizontal scanning	: 30 - 71 KHz
Vertical scanning	: 50 - 160 Hz
Video	
Video dot rate	: 108 Mhz
Input impedance	
-Video	: 75 Ohm
- Sync	: 2.2 kOhm
Input signal levels	: 0.7Vpp Separate sync
Sync input signal	: Composite sync
Sync polarities	: Positive and negative
White Color Temperature	
Chromaticity CIE coordinates:	
at 9300 °k	x = 0.283 y = 0.297
at 6500 °k	x = 0.313 y = 0.329
Power Management	
Complies with EPA Energy Star and NUTEK specifications	
Typical operation	: 75 W
Suspend/Standby Mode	: < 8 W
Off Mode	: < 2.5 W
Physical Specifications	
Dimensions	: 399x373x408mm(excluding base) 399x410x408mm(including base)
Net weight	: 15 Kg
Power supply	: 90 - 264 VAC, 50/60HZ
Power consumption	: 105 Watt
Operating condition	
Temperature	: 0 °C - 40 °C
Relative Humidety	: 5 % - 95 %
Storage condition	
Temperature	: - 25 °C - 65 °C
Relative Humidity	: 5 % - 95 %

Pin assignment :



The 15-pin D-sub connector(male) of the signal cable :

Pin No.	Assignment	Pin No.	Assignment
1	Red video input	9	No pin present
2	Green video input	10	Ground
3	Blue video input	11	Ground
4	Ground	12	Serial data line(SDA)
5	Self test	13	H.Sync
6	Red video ground	14	V.Sync(VCLK for DDC)
7	Green video ground	15	Data clock line(SCL)
8	Blue video ground		

Data Storage

Factory preset mode:

This monitor has 10 factory-preset modes as indicated in the following table :

	Mode	Resolution	Frequen		Sync polarity	
			H(KHz)	V(Hz)	H	H
M01	VGA	720 x 400	31.5	70	-	+
M02	VGA	640 x 480	31.5	60	-	-
M03	VGA	640 x 480	43.3	85	-	-
M04	SVGA	800 x 600	46.9	75	+	+
M05	SVGA	800 x 600	53.7	85	+	+
M06	EVGA	1024 x 768	60.0	75	+	+
M07	EVGA	1024 x 768	68.7	85	+	+
M08		1280 x 1024	64.0	60	+	+

Automatic Power Saving

If you have VESA's DPMS compliance display card or software installed in your PC, the monitor can automatically reduce is power consumption when not in use. And if an input from keyboard, mouse or other input devices is detected, the monitor will automatically "wake up". The following table shows the power consumption and signaling of this automatic power saving feature :

Power Management Definition

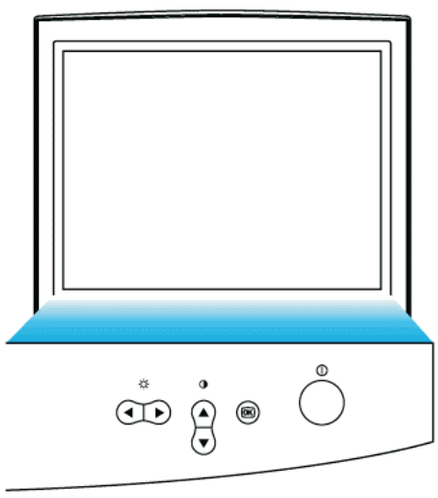
VESA's mode	VIDEO	H-SYNC	V-SYNC	POWER USED	POWER SAVING(%)	LED COLOR
ON	Active	Yes	Yes	< 100 W	0 %	Green
Stand-by	Blanked	No	Yes	< 15 W	>85 %	Yellow
Suspend	Blanked	Yes	No	< 15 W	>85 %	Yellow
OFF	Blanked	No	No	< 5 W	>95 %	Amber

This monitor is Environmental Protection Agency (EPA) Energy Star compliant and TCO'99 power management compatible.
*Zero power consumption in OFF mode can only be achieved by disconnecting the mains cable from the monitor.

ENERGY STAR ® is a U.S. registered mark. AS AN ENERGY STAR PARTNER, DELL Computer Corporation HAS DETERMINED THAT THIS PRODUCT MEETS THE ENERGY STAR GUIDELINES FOR ENERGY EFFICIENCY.

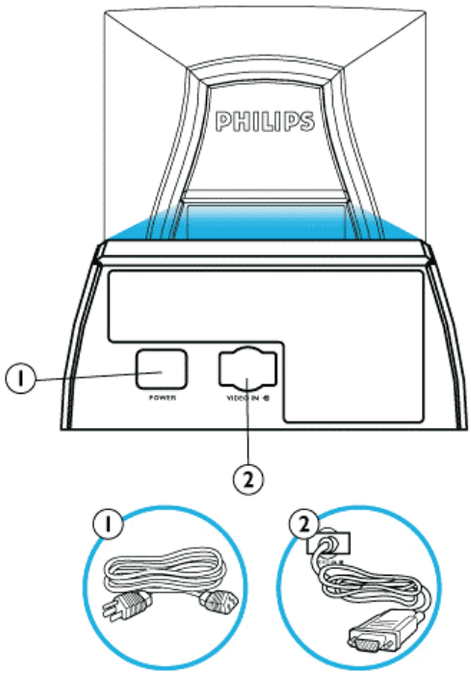
Installation

Front View



- Power button switches your monitor on.
- OK button which when pressed will take you to the OSD controls
- Contrast hotkey. When the UP arrow is pressed, the adjustment controls for the CONTRAST will show up.
- UP and DOWN buttons are used when adjusting the OSD of your monitor
- Brightness hotkey. When both the LEFT and RIGHT arrows are pressed at the same time, then the adjustment controls for BRIGHTNESS will show up.
- LEFT and RIGHT buttons, like the UP and DOWN buttons, are also used in adjusting the OSD of your monitor.

Rear V



1. Power in - attach power cable here.
2. Video In - this is a cable which is already attached to your monitor. Connect the other end of the cable to your PC.

On-Screen Display

Description of the On-Screen Display The OSD Tree The OSD Controls

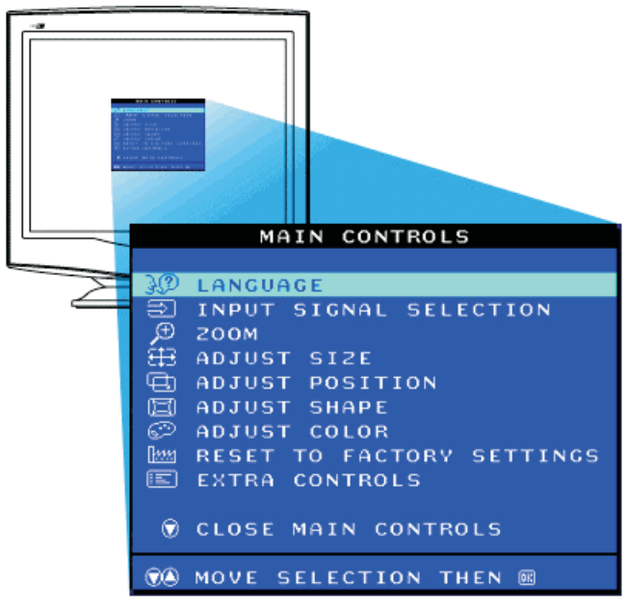
Description of the On Screen Display

What is the On-Screen Display?

This is a feature in all Philips monitors which allows an end-user to adjust screen performance of monitors directly though an on-screen instruction window. The user interface provides user-friendliness and ease-of-use when operating the monitor.

Basic and simple instruction on the control keys.

On the front controls of your monitor, once you press the button, the On Screen Display (OSD) Main Controls window will pop up and you can now start making adjustments to your monitor's various features. Use the or the keys to make your adjustments within.



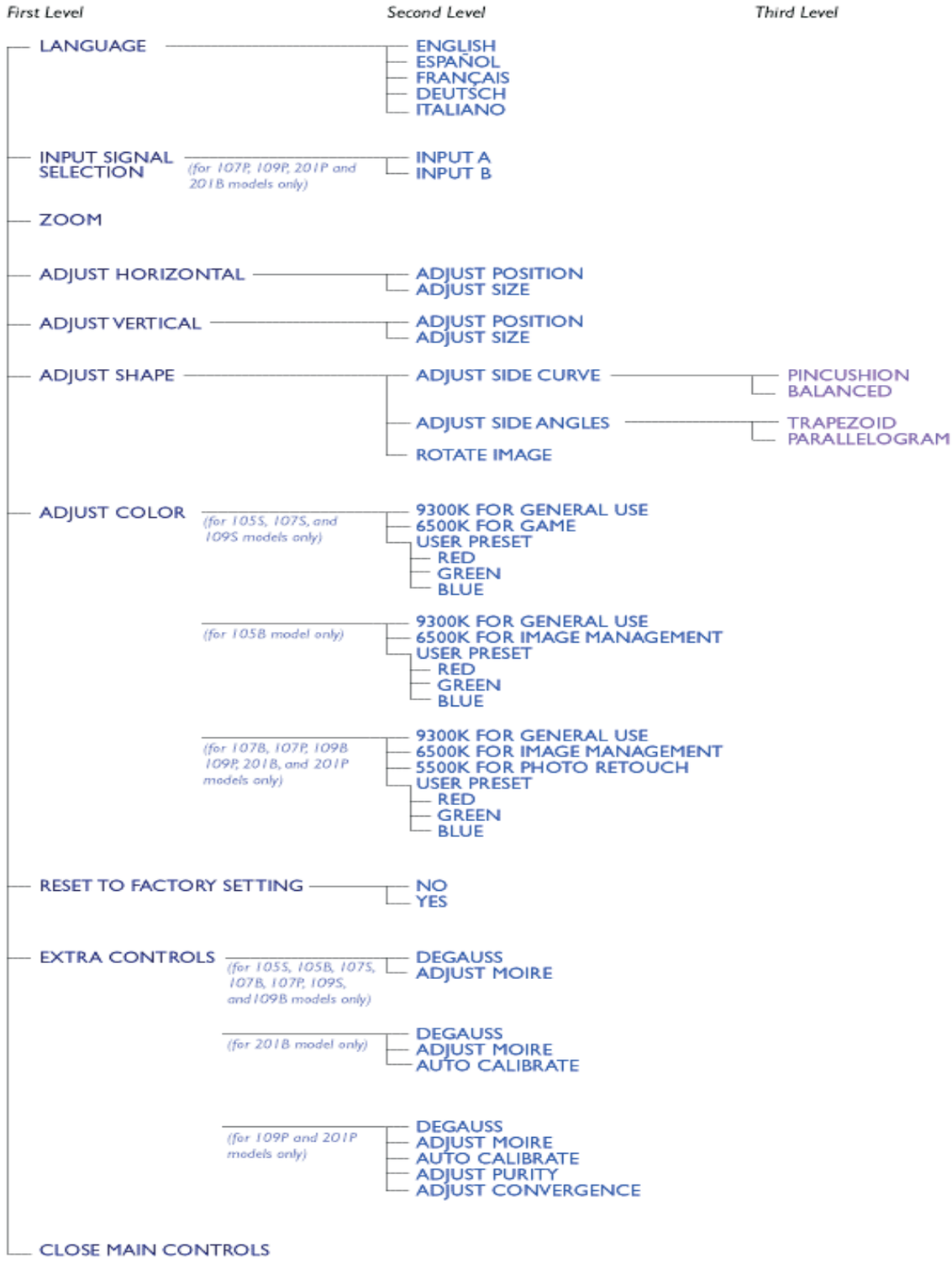
The OSD Tree

Below is an overall view of the structure of the On-Screen Display. You can use this as reference when you want to later on work your way around the different adjustments.

OSD menu tree atructure

The OSD Tree

Below is an overall view of the structure of the On-Screen Display. You can use this as reference when you want to later on work your way around the different adjustments.



* Specifications are subject to change without prior notice.